

ANDY DAVIS, PhD, 4-7-09

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1 IN THE UNITED STATES DISTRICT COURT FOR THE
2 NORTHERN DISTRICT OF OKLAHOMA
3
4

5 W. A. DREW EDMONDSON, in his)
6 capacity as ATTORNEY GENERAL)
7 OF THE STATE OF OKLAHOMA and)
8 OKLAHOMA SECRETARY OF THE)
9 ENVIRONMENT C. MILES TOLBERT,)
10 in his capacity as the)
11 TRUSTEE FOR NATURAL RESOURCES)
12 FOR THE STATE OF OKLAHOMA,)

13 Plaintiff,)

14 vs.)

4:05-CV-00329-TCK-SAJ

15 TYSON FOODS, INC., et al,)

16 Defendants.)

17 - - - - -
18 THE VIDEOTAPED DEPOSITION OF
19 ANDY DAVIS, PhD, produced as a witness on behalf
20 of the Plaintiff in the above styled and numbered
21 cause, taken on the 7th day of April, 2009, in the
22 City of Tulsa, County of Tulsa, State of Oklahoma,
23 before me, Lisa A. Steinmeyer, a Certified Shorthand
24 Reporter, duly certified under and by virtue of the
25 laws of the State of Oklahoma.

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Exhibit B

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A P P E A R A N C E S

FOR THE PLAINTIFFS:

Mr. Richard Garren
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FOR GEORGE'S:

Mr. Gary Weeks
Attorney at Law
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(Via phone)

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1 (Whereupon, the deposition began at
2 8:51 a.m.)

3 VIDEOGRAPHER: We are now on the Record for
4 the deposition of Dr. Andy Davis. Today is April
5 7th, 2009. The time is 8:51 a.m. Would counsel 08:51AM
6 please identify themselves for the Record?

7 MR. GARREN: Richard Garren, State of
8 Oklahoma.

9 MS. COLLINS: Melissa Collins for the
10 Cargill defendants. 08:51AM

11 VIDEOGRAPHER: Thank you. The witness may
12 be sworn in.

13 ANDY DAVIS, PhD
14 having first been duly sworn to testify the truth,
15 the whole truth and nothing but the truth, testified
16 as follows:

17 DIRECT EXAMINATION

18 BY MR. GARREN:

19 Q Dr. Davis, please state your full name and
20 residence for the Record? 08:51AM

21 A Andy Davis, Boulder, Colorado.

22 Q Do you have a street address in Boulder,
23 Colorado?

24 A 2295 Baseline Road.

25 Q Okay. Dr. Davis, last night I was handed a 08:51AM

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1 package about 4:30 or a quarter until 5:00 of an
2 errata and some documents attached to your report.
3 This is the Appendix B to your document, and I'd
4 like to ask some questions about it, if you would,
5 please. I apologize for the copy but that's all we
6 could -- I could make this morning in getting ready.
7 So if you have to look at my color -- the original,
8 which I have in my hand, we can do that, but I don't
9 think it will be necessary. Let's just start

08:52AM

10 through this. I put page numbers on yours so we
11 can -- so we could follow along, but I want to ask
12 you about what's contained in this Appendix B that's
13 been attached. Looking at Page 2 of the document,
14 that's a new image that was not contained in your
15 original report, is that correct, in your original
16 Appendix B?

08:52AM

17 **A** Well, I can't tell. Let's see. Do you have
18 the original as well?

19 **MR. GARREN:** Do you have a copy for him
20 there to look at?

08:53AM

21 **A** Thank you.

22 **Q** Okay. Would you agree with me that -- maybe
23 what I need to do is mark that, too, so we're not
24 really confused on what's what. Let's just stick
25 that on the front, if you would. Okay. We're going

08:53AM

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1 to refer to Exhibit 16 as your revised Exhibit B or
2 Appendix B, okay, and you have the original there in
3 front of you also; correct?

4 **A** That's correct.

5 **Q** All right. Look at Page 2 of your -- of 08:54AM
6 Exhibit 16, the revised Appendix B. Would you agree
7 with me that that's a new image that does not appear
8 in your original report?

9 **A** Actually it does appear but it's -- in the
10 original report, as you can see, on the first page 08:54AM
11 it's merely a depiction of where the houses are that
12 are on this figure here of the Illinois River
13 watershed but here they're in white. I just wanted
14 to simply highlight the location without the data so
15 to speak there. 08:54AM

16 **Q** You would agree, though, that it's a new image
17 that you've created on Page 2 --

18 **A** Yes, it is.

19 **Q** -- of your new appendix?

20 **A** It's a new image but it's not new information. 08:54AM

21 **Q** Okay. Let's go over to Page 5 of Exhibit 16.
22 Again, this is a new image added to your report.
23 Can you confirm that, please? This is in reference
24 to Site OK-02.

25 **A** Yes, that's correct. 08:55AM

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1 **Q** So this has been added to your report and it's
2 not included originally; is that true?

3 **A** That is correct.

4 **Q** It's not replacing anything that was in your
5 report before, is it? 08:55AM

6 **A** Well, it's actually very similar to the image
7 on top of what you're referring to as Page 4, yes.

8 **Q** Dr. Davis, would you agree with me that the
9 image on Page 5 is a new image different from the
10 images that are in your original report for Site 08:55AM
11 OK-02?

12 **A** It's a slightly different variant, yes.

13 **Q** Look at Page 7 of Exhibit 16, and would you
14 agree, sir, that that page contains two images for
15 Site OK-03 that do not appear in your original 08:56AM
16 report?

17 **A** Same thing. Slight differences, but
18 essentially the one on Page 7 of the new one, as you
19 define it, is very similar with the bottom one on
20 the OK-03 original. 08:57AM

21 **Q** While you say they're similar, would you agree
22 with me, sir, in response to my question, they are
23 in fact different and added to your report that were
24 not in your report earlier?

25 **A** Yes, slight differences. 08:57AM

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1 **Q** All right, and on the next page, Page 8 of
2 Exhibit 16, at the top of the page there is again a
3 new image that was not contained as you see it in
4 Exhibit 16 in your original report?

5 **A** On Page 8 you say? 08:57AM

6 **Q** Page 8, the top image, is that also a new
7 image that was not contained in your original
8 report?

9 **A** Yes. It's got some of the original -- same
10 data but it's a larger pan, so it has some more 08:57AM
11 information on it, that's correct.

12 **Q** It's a different image, is it not, added to
13 your report since your original report?

14 **A** It's similar but it's got some slight
15 differences, yes. 08:57AM

16 **Q** And look at Page 13 of the Exhibit 16 dealing
17 with Site OK-6. Same question. Do you agree that
18 the image in your amended report Page 13 is not
19 included in your original report?

20 **A** That's correct. That's not in the original 08:58AM
21 report, although the data on it would be in one of
22 the other figures.

23 **Q** Again, sir, my question is, is that image
24 different and now a new image added to your report
25 that was not in it originally? 08:58AM

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1 **A** Yes, it's an additional image.

2 **Q** All right. Look at Page 22 of Exhibit 16.

3 This one deals with Site AR-12. Same question. Do
4 you agree that the two images on Page 22 in Exhibit
5 16 do not exist but were added to your report?

08:59AM

6 **A** On Page 20?

7 **Q** 22 in Exhibit 16.

8 MS. COLLINS: And which site is that again,
9 I'm sorry, AR-12?

10 MR. GARREN: It deals with AR-12.

08:59AM

11 **Q** In your --

12 **A** Yeah, same thing. The images are slightly
13 different. Much of the data is already presented on
14 previous figures.

15 **Q** You would agree with me, sir, that those two
16 images were not included in your original report?

08:59AM

17 **A** Those specific images, that's correct.

18 **Q** All right, and the very next page, 23, dealing
19 again with that same site location, AR-12, that
20 image was not included in your original report but
21 has now been added; would you agree?

09:00AM

22 **A** The image is slightly different and, again,
23 the data has been presented in a previous report.

24 **Q** The image on Page 23 of Exhibit 16 does not
25 exist as we see it in Exhibit 16 in your original

09:00AM

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1 report, does it?

2 **A** The actual image, yes, but, again, the data is
3 on there previously.

4 **Q** My question is about the image. It's a new
5 image added; correct? 09:01AM

6 **A** The image is a new image.

7 **Q** All right. Look at the Page 26, sir, of
8 Exhibit 16. This one deals with Site AR-14 on Page
9 26.

10 MR. GARREN: Is someone in on -- did we 09:01AM
11 have somebody add in on the depo?

12 MR. WEEKS: Gary Weeks with Bassett Law
13 Firm.

14 MR. GARREN: All right. Anyone else on the
15 phone? 09:01AM

16 **Q** Would you agree, sir, that Exhibit 16, Page 26
17 is a new image that was not included in your
18 original report for Site AR-14?

19 **A** Yes. The image is new, but as I said before,
20 the data is previously provided. 09:02AM

21 **Q** Look at Page 47, if you would, please. This
22 one deals with Site AR-30. It's the image at the
23 bottom half of the page. Do you agree, sir, that
24 you removed a data point entry from the lower image
25 on Page 47 in Exhibit 16 that was present in your 09:02AM

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1 original report?

2 **A** I removed a data point?

3 **Q** Yes, sir. Do you see the data point 0.9386 in
4 your report?

5 **A** I see that one, yes. 09:03AM

6 **Q** And do you see that it's not present in your
7 Appendix B, Exhibit 16 amendment?

8 **A** That's correct. The reason is because it's a
9 slightly different orientation, and so in this
10 particular orientation that data point is covered 09:03AM
11 up.

12 **Q** Looking at the next page of Exhibit 16, Page
13 48, Exhibit 16, that image has had changes made to
14 it from what was in your original report; is that
15 correct? You added two data points, sir, that 09:03AM
16 weren't there before?

17 **A** Let's see. Looking at what page again?

18 **Q** Page 48. Did you add the data point in the
19 middle, .9386, that wasn't present before?

20 **A** Well, it was present before. It's just not 09:04AM
21 showing because, again, it's a different orientation
22 of the data.

23 **Q** Would you agree with me it doesn't show up in
24 your report in your original image?

25 **A** That's correct, it doesn't show up. 09:04AM

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1 **Q** And would you agree with me then that in your
2 original report and the original image, it does not
3 have the citation to the City of Lincoln water --
4 wastewater treatment plant listed in your original
5 report?

09:04AM

6 **A** I would agree with you on that.

7 **Q** All right, and one other annotation change
8 that you made is that you've added a sampling point
9 that says 1092.0033 that was -- that's shown in your
10 Exhibit 16 but not shown in your original report?

09:04AM

11 **A** Well, I didn't add the data point. It was
12 there all the time. Again, it's just the
13 orientation of the view.

14 **Q** Would you agree with me, sir, it does not show
15 up in your original report?

09:04AM

16 **A** It doesn't show up in the original report,
17 that's correct.

18 **Q** All right, and there's no way in looking at
19 your original report to know that that data point is
20 there, is there?

09:05AM

21 **A** Well, of course. All you have to do is go to
22 Site AR-30 and you've got 1092.0033 clearly defined.

23 **Q** And the image that we're comparing, sir, it
24 does not show up, does it?

25 **A** No, but it's on -- in the very first figure

09:05AM

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1 here.

2 Q All right. Let's go back to Page 53 dealing
3 with Site AR-34. Would you agree, sir, that you've
4 added a page with two images in your Exhibit 16
5 appendix that did not exist in your previous report? 09:05AM

6 A Hang on. Just trying to catch up with you
7 here. The image isn't here but, again, the data is
8 essentially captured in the previous images.

9 Q You agree with me, sir, that this is two
10 images added that were not present in your original 09:06AM
11 report?

12 A Yes, an additional view.

13 Q All right. Let's go on then to Page 55, and
14 the 55 page is in Exhibit 16 dealing with Site
15 AR-35. The lower half of the page on Exhibit 16 is 09:06AM
16 a new image not previously shown in your report; is
17 that correct?

18 A That's correct, same thing, though the data is
19 present. It's just a new vision.

20 Q Looking at Page 56, that page and that image 09:07AM
21 was never contained in your original report, was it?

22 A No. The image is different but, again, the
23 data is presented in the original report.

24 Q Agree, sir, if you would, please, that this is
25 a new page added with a new image that was not 09:07AM

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1 previously contained in your original report?

2 **A** I agree, but the important thing is whether
3 the data was there, and the data are on the previous
4 report.

5 **Q** I ask his response that was not responsive be 09:07AM
6 stricken. All right. Do you agree with me, sir,
7 that the images that we see that you've added could
8 have been prepared and included in your report at
9 the initial report?

10 **A** The objective was to clarify the information 09:08AM
11 and to provide as an errata additional views that
12 support the conclusions I've made. Whether it could
13 have been or not is really irrelevant.

14 **Q** Sir, let me ask you the question again and I'd
15 ask you to answer my question. Would you agree with 09:08AM
16 me that the new images that we've identified could
17 have been prepared and submitted with your original
18 report, yes or no?

19 **A** Well, it could have been, but it's not to that
20 point in time. 09:08AM

21 **Q** And you didn't do that; correct?

22 **A** That's correct.

23 **Q** You provided last night or through your
24 counsel a CD that had several additional pages of
25 material considered by you which were photos with a 09:09AM

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1 Bates stamp number Davis 00749 through 0812. Are
2 you familiar with those photos?

3 **A** You're talking about the trip photos?

4 **Q** I'm not -- sir, they're not identified, so I'm
5 asking, are you familiar with the photos 749 through 09:09AM
6 812 that were supplied to the State of Oklahoma late
7 yesterday afternoon?

8 **A** Can I see them and then I can confirm that?

9 **Q** I don't have copies with me.

10 **A** Well, in that case I can't confirm what's in 09:09AM
11 it what you are calling them, so-

12 MR. GARREN: Let's go off the Record a
13 second and I'll load up some --

14 VIDEOGRAPHER: We are now off the Record.
15 The time is 9:09 a.m. 09:09AM

16 (Following a short recess at 9:09 a.m.,
17 proceedings continued on the Record at 9:11 a.m.)

18 VIDEOGRAPHER: We are back on the Record.
19 The time is 9:11 a.m.

20 **Q** Dr. Davis, while off the Record, I allowed you 09:11AM
21 to look at an electronic version of your photos
22 provided late yesterday afternoon to the State that
23 are Bates numbered Davis 0749 through 0812. Did you
24 recognize those photos?

25 **A** Yes. 09:11AM

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1 Q Did you take those photos?

2 A Yes.

3 Q When did you take those photos?

4 A Last week.

5 Q And where were those photos taken generally 09:11AM
6 speaking?

7 A In and around the Illinois River watershed.

8 Q And why did you take those photos last week?

9 A Because I wanted a photo record of the places
10 I had visited. 09:12AM

11 Q Okay, and those were places that you visited
12 for the first time last week?

13 A That's correct.

14 Q Where are the native files that make up these
15 photos that we've seen as Davis 749 to 0812? 09:12AM

16 MS. COLLINS: Object to form.

17 A What do you mean; what do you mean the native
18 files?

19 Q Well, did you take these with old film or
20 electronic version digital? 09:12AM

21 A Digitally.

22 Q All right, and whose camera did you use?

23 A Mine.

24 Q And do you still have possession of that
25 camera? 09:12AM

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1 Q Anyone else present?

2 A There was somebody called Tim. I forget his
3 last name.

4 Q Tim, and do you know why he was there?

5 A He was a Cargill representative. 09:14AM

6 Q Was his name Tim Alsup or Tim Maupin?

7 A I don't recall.

8 Q When did you meet him for the first time?

9 A When I went to the site.

10 Q Which site? 09:14AM

11 A Well, during that tour.

12 Q Pardon me?

13 A During the tour.

14 Q During the tour. Did he start with you or
15 just meet you at some point? 09:14AM

16 A He met us at the hotel.

17 Q And so he went on the entire tour where all
18 these pictures were taken?

19 A That's correct.

20 Q Okay. Besides Tim and Ken, who else attended 09:14AM
21 with you on this photo excursion?

22 A There was a lawyer called Chris.

23 Q And do you know Chris' last name?

24 A Not as I sit here right now, no. I forget.

25 Q Anyone else? 09:15AM

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1 **A** That was the entire party.

2 **Q** Would you agree with me, sir, that none of
3 these photos have been referenced in your original
4 report?

5 **A** Yes. 09:15AM

6 **Q** And would you agree with me that none of these
7 photos have been referenced in your errata as you
8 prepared and delivered to the State yesterday late?

9 MS. COLLINS: Object to form.

10 **A** I believe they were provided along with the 09:15AM
11 errata.

12 **Q** Would you -- let me restate it. Maybe I
13 wasn't clear. Did you make any specific reference
14 to any of the photos that were taken in your errata?

15 **A** No. 09:15AM

16 **Q** Are there any descriptions telling where those
17 photos were taken?

18 **A** Yes. That was provided along with the photos.

19 **Q** And how was it provided?

20 **A** As a PDF, a map with some annotations on it. 09:16AM

21 **Q** Okay, and that's the first time the State has
22 seen that map; correct?

23 **A** I suppose so, yes.

24 **Q** Well, it was created solely for the purposes
25 of identifying where you took the photos; is that 09:16AM

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1 what I'm understanding you to say?

2 **A** That's correct.

3 **Q** All right. Change the subject here a little
4 bit, Dr. Davis. Do you agree that for decades it
5 has been known that agricultural land use practices 09:16AM
6 have adversely impacted water quality in the United
7 States?

8 MS. COLLINS: Object to form.

9 **A** I don't know. I haven't studied that
10 particular issue. 09:17AM

11 **Q** All right. Do you know, sir, whether or not
12 for decades it has been known that agricultural land
13 use practices have adversely impacted the water
14 quality in the Illinois River watershed?

15 MS. COLLINS: Object to form. 09:17AM

16 **A** Again, I haven't studied that particular
17 issue.

18 **Q** All right. Do you agree sir, that phosphorus,
19 as a constituent of poultry waste, will run off from
20 land in the IRW where it has been land applied? 09:17AM

21 MS. COLLINS: Object to form.

22 **A** It depends on a number of factors, not the
23 least of which is the proximity to water bodies and
24 the potential for runoff.

25 **Q** Okay. Do you agree then it can? 09:17AM

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1 **A** No. Another case.

2 **Q** Where was that other site?

3 **A** As I recall, it was a project I was doing on
4 chat in Oklahoma a few years ago.

5 **Q** And what -- where was it located? 09:18AM

6 **A** That was in the area around Picher I think.

7 **Q** All right, and do you know whether or not
8 Picher is in or around the Illinois River watershed?

9 **A** No, it's not.

10 **Q** All right, and are you telling the court that 09:19AM
11 you drove through the Illinois River watershed to
12 get to Picher?

13 **A** Through some portion of it, yes.

14 **Q** And where did you drive from in order to go to
15 Picher? 09:19AM

16 **A** As I recall, it was Little Rock I want to say.

17 **Q** All right. So you drove from Little Rock, to
18 Picher, Oklahoma?

19 **A** As I recall, yes.

20 **Q** And when was this done? 09:19AM

21 **A** Several years ago.

22 **Q** All right, and at the time you drove through,
23 were you engaged to work in this case?

24 **A** No.

25 **Q** So when you drove through, you didn't have any 09:19AM

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1 knowledge that you would in fact be doing work in
2 the Illinois River watershed in the future at that
3 time; right?

4 **A** That's correct.

5 **Q** On your trip this April 1 and 2 that you took 09:19AM
6 the photos, at where did you go other than the where
7 the photos are represented. Are there places other
8 than where you took photos that you observed in the
9 Illinois River watershed where photos may not have
10 been taken? 09:20AM

11 **A** Well, yes. I mean, we drove around the
12 watershed, so obviously I'd have seen other places
13 that weren't where the photos were taken.

14 **Q** Let me ask you this, sir: Did you in fact go
15 to every Cargill grower site location? 09:20AM

16 **A** Yes.

17 **Q** So you visited every site location on April 1
18 and April 2 for the first time in this case;
19 correct?

20 **A** Well, that's correct physically but, of 09:20AM
21 course, I evaluated at some level of detail using
22 the application I have what the sites looked like.
23 So I wasn't completely a novice with the sites.

24 **Q** I'm asking you, though, physically to observe
25 the sites, the first time you ever observed any 09:20AM

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1 Cargill site was on April 1 or 2 of this year?

2 **A** Physically, that's correct, but I've been
3 studying them for the previous two or three months.

4 **Q** When you were in the IRW on April 1 and April
5 2 of this year, did you conduct any field studies or 09:21AM
6 scientific analysis or investigation?

7 MS. COLLINS: Object to form.

8 **A** Only from an observational perspective.

9 **Q** Okay. Did you take any samples of any soil,
10 water or sediment? 09:21AM

11 **A** No.

12 **Q** Did you take any measurements of any of the
13 physical sites that you visited?

14 **A** No.

15 **Q** Do you know whether or not the constituents of 09:21AM
16 poultry waste can leach within the Illinois River
17 watershed?

18 MS. COLLINS: Object to form.

19 **A** Do you mean percolate down through the
20 horizon? 09:21AM

21 **Q** Yes, sir.

22 **A** It depends on the soil chemistry.

23 **Q** Have you, sir, studied the soil chemistry in
24 the Illinois River watershed?

25 **A** Yes. 09:22AM

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1 **Q** And how have you studied it?

2 **A** I have gone to peer-reviewed literature and am
3 aware that it's a combination of ultisols and
4 alfisols.

5 **Q** Is that published literature contained in your 09:22AM
6 considered materials?

7 **A** I believe so, yes.

8 **Q** And can you tell me the name of the
9 publication that you're referring to?

10 **A** I believe it's watershed-wide study. 09:22AM

11 **Q** Of the Illinois River watershed?

12 **A** Of -- I believe that's correct, yes.

13 **Q** It's, in fact, a different watershed?

14 **A** Let me see if I can identify it here in
15 considered materials. 09:22AM

16 **Q** I don't have them here. I'm asking you
17 whether or not you recall whether it dealt with a
18 different watershed.

19 **A** No. It definitely dealt with the Illinois
20 River watershed. 09:23AM

21 **Q** Okay, and how many published papers did you
22 review to determine what the soils were in the
23 Illinois River watershed?

24 **A** Well, it was identified in I think it was a
25 USGS publication, along with climate and topography 09:23AM

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1 and groundwater conditions and a variety of other
2 environmental descriptions.

3 Q And is that the only source of information
4 that you looked at in determining the soil makeup
5 within the IRW? 09:23AM

6 A As I recall right now.

7 Q Do you agree, sir, that bacteria, as a
8 constituent of poultry waste, will run off from land
9 in the IRW from where it's been applied?

10 MS. COLLINS: Object to form. 09:23AM

11 A It depends where it's applied.

12 Q So you say it can; is that correct?

13 A I don't know. I haven't studied that.

14 Q All right, and have you studied whether or not
15 bacteria can leach into the groundwater in the 09:24AM
16 Illinois River watershed?

17 A No, I haven't.

18 Q Today am I understanding that you're not
19 prepared as part of your report or your testimony to
20 give an opinion whether or not poultry waste will 09:24AM
21 run off from the land in the Illinois River
22 watershed?

23 MS. COLLINS: Object to form, misstates
24 testimony.

25 A What I said was I've evaluated that potential 09:24AM

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1 for the Cargill houses.

2 Q And other than that, that is all that your
3 opinions deal with; correct?

4 A That's correct.

5 Q All right, but you have not specifically 09:24AM
6 studied or read peer-reviewed articles as to runoff
7 potential or the runoff capability of poultry waste
8 in the Illinois River watershed?

9 A No, I haven't focused on that. I've been
10 looking at the Cargill properties. 09:24AM

11 Q Tell the court what are the constituents of
12 concern that you dealt with for purposes of your
13 report.

14 A Phosphorus.

15 Q Is that the sole constituent that you dealt 09:25AM
16 with?

17 A For the purpose of my report, yes.

18 Q And that is the limitation of your opinions,
19 that is -- let me restate that. Your opinions,
20 therefore, are limited solely to phosphorus; is that 09:25AM
21 correct?

22 MS. COLLINS: Object to form.

23 A Well, not completely just to phosphorus.
24 There's other elements in my report that do other
25 things, but it seems to be the tracer of most 09:25AM

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1 concern to the State based on my review of the
2 expert reports.

3 Q All right. Let me ask you this then, sir:
4 With regard to other constituents of poultry waste,
5 have you studied for purposes of your opinions in
6 this case any other constituents of concern
7 contained within poultry waste besides phosphorus?

09:25AM

8 MS. COLLINS: Object to form.

9 A For the purpose of my study, I glanced at
10 other constituents such as nitrate, arsenic, copper
11 and zinc in waters in the Illinois River watershed,
12 but I didn't focus on them because that's not what
13 the primary constituent is that seems to be of
14 concern in this case.

09:26AM

15 Q So my question to you is, are you giving an
16 opinion with regard to the fate and transport of
17 nitrate from Cargill sites?

09:26AM

18 A No, not -- nowhere close to the same level of
19 detail as I have with the phosphorus.

20 Q My question to you is, are you giving any
21 opinion with regard to the fate and transport of
22 nitrate from Cargill sites?

09:26AM

23 A Not at this point in time.

24 Q Are you giving any opinion in this case with
25 regard to arsenic fate and transport from any

09:26AM

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1 Cargill sites?

2 **A** Not at this point in time.

3 **Q** Are you giving any opinions in this case with
4 regard to the fate and transport of copper from

5 Cargill sites? 09:26AM

6 **A** Not at this point in time.

7 **Q** Are you giving any opinions in this case with
8 regard to the fate and transport of zinc from

9 Cargill sites?

10 **A** Not at this point in time. 09:27AM

11 **Q** All right. You in your report define Cargill
12 as the Cargill Company and the growers. Am I
13 correct on that? Let me hand you what's been marked
14 Plaintiff's Exhibit 1, which is your report.

15 MS. COLLINS: This is the original report 09:27AM
16 of January 29th?

17 MR. GARREN: Correct. You can see the
18 January date on it. That's --

19 **Q** Do you see on Page 1 of your report where you
20 refer to the 35 Cargill contract growers or Cargill 09:27AM
21 owned, collectively Cargill locations?

22 **A** Yes.

23 **Q** All right. So when you use the word Cargill
24 in your report, you're referring to the collective

25 Cargill; is that true? 09:28AM

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1 MR. BURNS: Object to form.

2 A That's correct.

3 Q All right. So for purpose of our deposition,
4 you and I in communicating will agree when we use
5 the term Cargill, we will mean both Cargill company 09:28AM
6 owned or its contract growers unless we specify
7 otherwise?

8 A Well, what we'll be talking about is the 35
9 specific locations I've evaluated.

10 Q All right. 09:28AM

11 A Whatever the terminology is for your use, but
12 that's what I'm talking about.

13 Q Well, I'm using your same terminology. So if
14 we use Cargill, we know that's what we're talking
15 about; do you agree? 09:28AM

16 A Well, no. I'm talking about the 35 locations
17 here.

18 Q I am, too.

19 A Okay. In that case, we're in 100 percent
20 agreement. 09:28AM

21 Q Okay. Do you agree, sir, that phosphorus from
22 land-applied poultry waste is getting into the water
23 sources of the Illinois River watershed?

24 MS. COLLINS: Object to form.

25 A I've just looked at the 35 houses. I don't 09:29AM

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1 really have an opinion on that.

2 **Q** And, thus, you aren't expected to express an
3 opinion with regard to whether poultry from land
4 applied -- whether phosphorus from land-applied
5 poultry waste is getting into the water resources in 09:29AM
6 the IRW; is that correct?

7 **MS. COLLINS:** Object to form.

8 **A** Well, it depends on location, and I was
9 looking at the Cargill locations. I haven't studied
10 other locations. 09:29AM

11 **Q** Okay. Let me ask you this, sir: Have you
12 taken any samples in the Illinois River watershed
13 for purposes of your analysis on the Cargill sites?

14 **A** No. I've relied on the State database.

15 **Q** Have you taken -- just so I'm clear, you've 09:30AM
16 not taken, or people working for or under you,
17 either soil, water or sediment samples in the
18 Illinois River watershed for this case?

19 **A** That's correct. We've relied on the State
20 database. 09:30AM

21 **Q** Are there any published papers not found in
22 your considered materials that you relied on for
23 purpose of forming any of your opinions in this
24 case?

25 **A** Not that I recall right now. 09:30AM

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1 **A** From my study, I assumed that they applied
2 litter proximal to the houses.

3 **Q** When you say proximal, what do you mean in
4 distance?

5 **A** Well, in fields adjacent to the properties or 09:32AM
6 the houses.

7 **Q** Fields adjacent to the houses or to the
8 property? I'm not sure I understand.

9 **A** Adjacent to the houses on the property.

10 **Q** On the property? 09:32AM

11 **A** Yes.

12 **Q** Okay, and when you made that assumption, did
13 you assume that for a period of a number of years or
14 just one year; what's your assumption?

15 **A** I didn't have an assumption because I was 09:32AM
16 looking at the data that had been collected by the
17 State from 2005 through approximately 2008,
18 thereabouts.

19 **Q** What history did you obtain with regard to the
20 application of poultry waste at the Cargill 35 09:32AM
21 sites?

22 **A** I didn't have any information to that. That's
23 why I just assumed it had been deposited on the
24 sites adjacent to the houses.

25 **Q** Okay, and for what period of time did you 09:33AM

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1 assume that these deposits had been made?

2 **A** I didn't make any assumptions in that regard.

3 **Q** And did you make any assumption with regard to
4 the rate of application of poultry waste made at the
5 Cargill sites? 09:33AM

6 MS. COLLINS: Object to form.

7 **A** No.

8 **Q** Do you have any knowledge as to how long
9 poultry waste has been land applied at any or all of
10 the Cargill sites? 09:33AM

11 **A** No.

12 **Q** Do you have any specific knowledge as to the
13 rate of application of poultry waste at any of the
14 Cargill sites?

15 MS. COLLINS: Object to form. 09:33AM

16 **A** No.

17 **Q** Do you agree that in the IRW poultry waste has
18 historically been applied to satisfy the nitrogen
19 needs of the grass crop?

20 MS. COLLINS: Object to form. 09:34AM

21 **A** My understanding is it's for the nitrogen,
22 phosphorus, nutrients of the grass.

23 **Q** Prior to regulation controlling phosphorus,
24 did you have any knowledge that the poultry waste
25 being applied in the IRW was in order to satisfy the 09:34AM

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1 nitrogen needs of the grass crops?

2 MR. BURNS: Object to form.

3 A I think I just answered that question. I
4 thought it was for nitrate and the phosphate
5 requirements.

09:34AM

6 Q Do you agree, sir, that if you're applying
7 nitrogen for a grass crop -- let me restate that.
8 Do you agree, sir, that if you are applying poultry
9 waste in order to satisfy the nitrogen needs of the
10 grass crop, that phosphorus would be over applied?

09:34AM

11 MR. BURNS: Object to form.

12 MS. COLLINS: Object to form.

13 A I haven't studied that.

14 Q So you don't know that?

15 A No.

09:34AM

16 Q Let's look again at Exhibit 1 that's in front
17 of you and I'll ask you some questions about your
18 report. Did you write the report in its entirety?

19 A Yes. It's my responsibility, and I wrote most
20 of the verbiage. Anything that was added was under
21 my direction.

09:35AM

22 Q And who else contributed to any of the
23 verbiage that's contained in this report?

24 A Ken Kolm would have had some edits in here and
25 Rick Ditmars would also have contributed.

09:35AM

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1 **Q** Can you spell Rick Ditmars' name for the
2 Record?

3 **A** D-I-T-M-A-R-S. They worked under my
4 jurisdiction.

5 **Q** What areas would Mr. Kolm have contributed to 09:35AM
6 in your report then, please?

7 **A** If you don't mind, perhaps I can explain to
8 you how I did the report and then --

9 **Q** Let me just ask -- if you can just answer my
10 question. Is there a particular area that Mr. Kolm 09:36AM
11 contributed?

12 MS. COLLINS: Object to form.

13 **A** Well, after I'd written the first part of the
14 report, the first iteration, I had Mr. Kolm go back
15 in and check some of the numbers and do some further 09:36AM
16 detailed analysis on the actual database.

17 **Q** All right. Let's talk about the detailed
18 analysis. What did he look at in his detailed
19 analysis of the database?

20 **A** I instructed him to QA/QC, the conclusions I 09:36AM
21 had drawn, and to go back and check on the numbers
22 in the database.

23 **Q** All right. Was he the only person then that
24 did the QA/QC as you've described?

25 **A** In that fashion, yes. 09:36AM

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1 **Q** And was there others who did so in a different
2 fashion?

3 **A** Well, I did. For example, I found out that
4 one of the concentrations was incorrect, didn't look
5 right in the State's database or the Exponent 09:37AM
6 database, so I inquired as to that particular
7 problem, and we found an error in the databases that
8 had been supplied to us.

9 **Q** And that was done prior to writing of your
10 first report? 09:37AM

11 **A** No. That was in between the first report and
12 the errata.

13 **Q** All right, and when did you discover that
14 error?

15 **A** Oh, it would have been between those two 09:37AM
16 reports. I don't recall exactly.

17 **Q** Well, give me your best guess because the
18 first one is in January and the next one is in
19 April. So there's quite a bit of time there. Can
20 you tell me when it was? 09:37AM

21 **A** Might have been in the March time frame.

22 **Q** And would it be the first part of March or the
23 end of March?

24 **A** I don't recall. Probably the first part of
25 March I suppose. 09:37AM

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1 **Q** What caused you in the first part of March to
2 go in and look at the information again?

3 **A** Because we were looking at the information to
4 just see how to prepare for deposition. We noticed
5 this apparent error. We checked into it, and we
6 found it was an error.

09:37AM

7 **Q** And do you recall which data entry that is
8 that you were talking about?

9 **A** Yes. It's Site 22.

10 **Q** So it would be AR-22?

09:38AM

11 **A** Yes, and AR-26, 27 and 28, and we found that
12 the point identified as 31, which appears anomalous,
13 was actually a 0.031. So there had been a
14 transcription error somewhere between the lab data
15 and the database.

09:38AM

16 **Q** So the database you're referring to, is it the
17 one that you took or is it the actual CDM database
18 that the error occurs?

19 **A** I don't know. It was in the database we have
20 that was provided to me off the site's website. So
21 I don't know the exact genesis of the error, but we
22 found the error, went back to the original lab
23 sheets and found this was wrong, so we corrected it.

09:39AM

24 **Q** And you just realized that in March of this
25 year; correct?

09:39AM

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1 **A** That's correct.

2 **Q** All right, and does that same data point show
3 up on the other sites, 26, 7 and 8, or are there
4 different data entries that you were correcting?

5 **A** No. It shows up on all three of those. 09:39AM

6 **Q** All right. So it's the same single data
7 point, just in three different sites or four
8 different sites?

9 **A** That's correct.

10 **Q** All right. Back now to Ken Kolm contribution. 09:39AM
11 You talked about him doing QA/QC. What else did he
12 do, and I'm talking about in reference to
13 contributions to the written report that we see.

14 **A** That was about it.

15 **Q** All right. A Rich or Rick Ditmise (sic), tell 09:40AM
16 me what contribution he made to your report.

17 **A** I asked him to do some quintile plots to look
18 at sediment populations of phosphorus in the
19 environment from the database, so he did that.

20 **Q** All right. So you didn't actually prepare 09:40AM
21 those plots; he did?

22 **A** Under my direction.

23 **Q** Did he do anything else beside the QQ plots?

24 **A** No.

25 **Q** Does this report -- I'll ask you first on the 09:40AM

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1 January portion of this report, does that report
2 contain all of the opinions you're going to provide
3 in this case?

4 **A** Well, that as modified by the errata you
5 received.

09:41AM

6 **Q** Okay. I'm going ask you about the errata, but
7 with regard to what I see in the January report,
8 those are all the opinions you're going to make;
9 correct?

10 **A** You mean in the actual summary of the
11 opinions, that's correct.

09:41AM

12 **Q** There are no other changes to the text -- let
13 me ask it this way and maybe it's easier. With
14 regard to this January version and your now April
15 version, are all of the changes to any opinions
16 referenced in your errata?

09:41AM

17 **A** As far as I know at this juncture. If I find
18 other errors moving forward, then obviously I'd
19 reserve the right to modify opinions if there's a
20 specific data point that changes.

09:41AM

21 **Q** Okay. Would you agree with me, sir, though,
22 that based upon your errata, you're telling us that
23 you've not made any changes in your opinions that
24 were previously listed in your January report?

25 **A** Well, only in so much as one of the site

09:41AM

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1 definitions has changed. So with the errata,
2 consider that is the sum of my opinions, yes.

3 Q Okay. Are there any other opinions that you
4 have formed that are not contained either in your
5 report or in your errata?

09:42AM

6 A Not that I can think of at this point.

7 Q When did you first communicate to counsel that
8 you had found errors in the first part of March to
9 your original report?

10 A As I recall, it would have been March, but the
11 errors were in the database for -- the errors in the
12 database, for example, the 31 we talked?

09:42AM

13 Q You can start with that, yes, sir. When did
14 you first -- you told me that's the one you found in
15 the first part of March; correct?

09:42AM

16 A Correct.

17 Q All right, and when did you first notify
18 counsel that that error was observed and you wanted
19 to change your report?

20 A Well, that would be March I highlighted the
21 issue because obviously a four-fold error in
22 magnitude is something worth or three-fold error in
23 magnitude is something worth noting.

09:43AM

24 Q When did you publish your errata and provide
25 it to counsel in this case?

09:43AM

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1 **A** I think it was last Thursday or Friday.

2 **Q** What took you so long to publish your errata
3 from the time you learned of it in March?

4 **A** It was just -- what I was asked to do is
5 provide errata sheets where I found them. 09:43AM
6 the reasons was because I wanted to check on a
7 couple of sites to look at drainage patterns, and so
8 there's one site, for example, where it appears that
9 drainage pattern was different than I'd originally
10 assumed. 09:43AM

11 **Q** And you corrected that in your errata showing
12 that that site drained to the east when you didn't
13 think it did before; correct?

14 **A** I think that's correct, yes.

15 **Q** Were you the person that found the data entry 09:44AM
16 errors or was it somebody working for you?

17 MS. COLLINS: Object to form.

18 **A** When you say data entry errors, what are you
19 specifically talking about?

20 **Q** Well, you talked about that specific point, 09:44AM
21 the 31 that was not listed correctly.

22 **A** Okay.

23 **Q** And you said you found that in early March.

24 **A** Yes.

25 **Q** Was it you that found it or was it someone 09:44AM

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1 else working for?

2 **A** That was Ken Kolm working for me.

3 **Q** All right. When were you originally hired to
4 perform work in this case?

5 **A** As I recall, it was October of 2008. 09:44AM

6 **Q** And did you sign a contract?

7 **A** I think there was a retention letter that was
8 provided to you as part of my considered by
9 documents.

10 **Q** And how much have you been paid in this case? 09:45AM

11 **A** I don't know, but the invoices have been
12 provided to you as well.

13 **Q** Okay. We'll look at those later then. Did
14 you provide all of the invoices?

15 **A** All the ones through when I was required to 09:45AM
16 make the production, yes.

17 **Q** Did you do any work in this case that involved
18 the preliminary injunction hearing that was
19 conducted early in 2008?

20 **A** No. 09:45AM

21 **Q** All right. Let's look at Page 6 of your
22 report, sir. In reference to Paragraph 8 on that
23 page, it says that, and I'll quote, noted other
24 anthropogenic features that potentially contribute
25 to P -- or contribute P to the watershed in close 09:46AM

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1 proximity to Cargill locations or between the
2 Cargill location and sample sites. Tell me, if you
3 would, sir, how were those anthropogenic features
4 noted in your report?

5 **A** How were they noted? 09:46AM

6 **Q** Yeah. How did you actually make reference to
7 them; can you give me an example of where that shows
8 up?

9 **A** Yeah. If you look at Page 4, for example,
10 halfway down it says the sources could include, but 09:46AM
11 are not include limited to, septic systems,
12 campgrounds, wastewater treatment plants, cattle,
13 poultry, urban runoff, fertilized yards and golf
14 courses, for example, and runoff from agricultural
15 fields where phosphorus-containing pesticides and 09:46AM
16 commercial fertilizers have been applied.

17 **Q** Okay. Let's go down that list then. I want
18 to ask you about those. Establish for me and tell
19 me, if you would, please, what data with regard to
20 septic tank systems did you observe or look at in 09:47AM
21 preparation for the statement given in Paragraph 8
22 of your opinions.

23 MS. COLLINS: Object to form.

24 **A** Well, if you look at a number of these
25 locations along the Illinois River watershed rivers, 09:47AM

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1 you can see there's houses and they're on septic
2 systems, not POTWs, and so there's a possibility
3 that houses having septic systems could discharge to
4 the river system.

5 **Q** All right. Did you, sir, look at any data 09:47AM
6 with regard to any of those septic systems in
7 preparation of your report?

8 MS. COLLINS: Object to form.

9 **A** No, but I know septic systems can release over
10 time. 09:47AM

11 **Q** Okay, and did you make an inventory of the
12 number of septic systems that you observed?

13 **A** No.

14 **Q** Okay, and did you look for septic systems on
15 April 1 and April 2 when you were in the watershed? 09:48AM

16 **A** I noticed some locations where it's likely
17 they would have had septic systems that could have
18 discharged in the river.

19 **Q** Would have and could have, but did you, sir,
20 study any data that in fact showed they were? 09:48AM

21 MS. COLLINS: Object to form.

22 **A** Well, I noticed some of the phosphorus
23 concentrations were anomalous, and in some cases
24 there were higher phosphorus concentrations in the
25 surface water directly adjacent to where there was 09:48AM

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1 structures.

2 Q Structures meaning what?

3 A Houses or churches.

4 Q Would it include poultry barns?

5 MS. COLLINS: Object to form. 09:48AM

6 A Not in this case, no.

7 Q Did anybody for your report provide you
8 numbers of septic tanks that are in the IRW?

9 A No.

10 Q Did you have available and review any 09:49AM
11 literature with regard to whether septic tank
12 systems in the IRW have a fail rate?

13 MS. COLLINS: Object to form.

14 A No.

15 Q Did you or anyone working on your behalf do a 09:49AM
16 survey to determine if there had been any failed
17 septic systems in the IRW for purposes of your
18 report?

19 A No.

20 Q Did anyone else make any observations in the 09:49AM
21 Illinois River watershed for you prior to your going
22 to the watershed in April of this year?

23 A Yes.

24 Q Who was that?

25 A That was Ken Kolm. 09:50AM

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1 **Q** And tell me what it is he did in the watershed
2 generally.

3 **A** Generally there were a couple of sites that I
4 wanted some more information about. So I directed
5 him to go out to the watershed in January and look
6 at those sites.

09:50AM

7 **Q** Okay. Do you recall which sites they were?

8 **A** As I recall, it was OK-01 and OK-02.

9 **Q** All right.

10 **A** Along with a couple of others.

09:50AM

11 **Q** Do you remember those?

12 **A** I believe they're are the ones with the 31
13 milligram per liter concentration.

14 **Q** That's the one you thought was in error and
15 changed; is that what you're referring to or is it a
16 different --

09:50AM

17 **A** It was the one that we found the error in the
18 database and changed on those -- that set.

19 **Q** What data or information did you have with
20 regard to campgrounds being a source of
21 anthropogenic phosphorus in the watershed?

09:51AM

22 **A** Well, I knew from my original research that
23 there were campgrounds along the Illinois River
24 watershed, and Dr. Kolm told me in fact he had
25 confirmed that on his site visit in January.

09:51AM

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1 **Q** Okay, and did he confirm whether or not there
2 were facilities available at those campgrounds?

3 MS. COLLINS: Object to form.

4 **A** By facilities --

5 **Q** Meaning restroom facilities. 09:51AM

6 **A** Yes.

7 **Q** All right, and did he make any inspection of
8 those restroom facilities?

9 MS. COLLINS: Object to form.

10 **A** Not as far as I'm aware. 09:51AM

11 **Q** I'm sorry, not as far what?

12 **A** Not as far as I'm aware.

13 **Q** Okay. Did he provide you any data or studies
14 with regard to the potential of campgrounds to
15 contribute phosphorus in the Illinois River 09:52AM
16 watershed?

17 **A** No. He pointed out that there was half a
18 dozen such facilities along the Illinois River.

19 **Q** Did you attempt yourself to quantify the
20 potential source or volume of phosphorus 09:52AM
21 contribution from that half a dozen sites?

22 MS. COLLINS: Object to form.

23 **A** No.

24 **Q** Okay. We have to take a break to change the
25 tape and we'll be back as soon as five minutes or 09:52AM

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1 so.

2 VIDEOGRAPHER: We are now off the Record.

3 The time is 9:52 a.m.

4 (Following a short recess at 9:52 a.m.,

5 proceedings continued on the Record at 10:01 a.m.) 10:00AM

6 VIDEOGRAPHER: We are back on the Record.

7 The time is 10:01 a.m.

8 Q Dr. Davis, we were talking about your other
9 anthropogenic sources, and the next one on the list
10 is wastewater treatment plants. Can you tell me 10:01AM

11 whether or not you obtained any discharge rates from
12 any wastewater treatment plants in the Illinois
13 River watershed for your work?

14 A I reviewed some of the data in one of the
15 other expert reports. 10:01AM

16 Q And whose report did you review?

17 A I believe it was Engel's.

18 Q And what data did you specifically look at; do
19 you recall?

20 A I believe it was discharge rates from a series 10:01AM
21 of POTWs.

22 Q Other than looking at Dr. Engel's report, did
23 you obtain any other data with regard to wastewater
24 treatment plant discharge rates as it relates to
25 phosphorus? 10:02AM

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1 **A** No.

2 **Q** Tell the court, if you would, please, sir,
3 what data did you review regarding cattle in the
4 Illinois River watershed and their contribution of
5 phosphorus.

10:02AM

6 **A** Again, it was some reference to cattle in the
7 Engel report as I recall.

8 **Q** All right. Other than the Engel report, did
9 you look at or obtain any other data regarding
10 cattle contribution of phosphorus in the watershed?

10:02AM

11 **A** Well, during my site visits I observed cattle
12 crossings and noticed some cow pies in the river.
13 That was a visual observation.

14 **Q** Okay, and how many such observations did you
15 make?

10:02AM

16 **A** Oh, several different locations where there
17 were cattle and there was bridges.

18 **Q** And would you agree with me, sir, that you did
19 not know or have benefit of those observations at
20 the time you wrote your report?

10:03AM

21 **A** Well, I knew it occurred, so --

22 **Q** Tell me, sir, how you knew it occurred at the
23 time that you wrote your report.

24 **A** Well, I asked Ken Kolm to check and see if he
25 would see that type of behavior in the IRW, and he

10:03AM

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1 confirmed that, yes, there were cattle crossings
2 and, yes, there were cattle in water.

3 Q And did he document that in any way?

4 A I believe in some of his photographs, yes.

5 Q And are those photographs supplied in your 10:03AM
6 considered materials other than the ones we looked
7 at this morning?

8 A I believe so.

9 Q And so other than the photos that Ken Kolm
10 obtained for you at the time of your original 10:03AM
11 report, is there any other data relied on besides
12 that in Dr. Engel's report?

13 A Well, I know from general knowledge that's the
14 case.

15 Q And how do you know from general knowledge 10:04AM
16 that's the case?

17 A Well, over my 30 years of experience in
18 looking at environmental matters.

19 Q Have you studied waste from cattle in any
20 other case, sir? 10:04AM

21 A Not that I recall right now, no. I just
22 happen to know that they frequent water bodies.

23 Q What data did you rely on with regard to urban
24 runoff as a contribution of P in your report as
25 other sources of anthropogenic features? 10:04AM

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1 **A** Just general knowledge.

2 **Q** All right. You did not obtain any data in the
3 IRW with regard to the population?

4 MS. COLLINS: Object to form.

5 **Q** The human population in the IRW? 10:04AM

6 **A** Well, again, I looked at reports that have
7 been produced by the State, and I saw there was a
8 population demographics, so --

9 **Q** Which reports did you look at?

10 **A** Again, I think it was the Engel report. 10:05AM

11 **Q** Anything else?

12 **A** Perhaps Fisher.

13 **Q** And Fisher?

14 **A** I'd have to go back and check.

15 **Q** All right. Any other reports did you look at, 10:05AM
16 besides Engel and Fisher, regarding urban runoff
17 data?

18 **A** No. That was the summary of it.

19 **Q** Did you review any land use cover maps in the
20 IRW? 10:05AM

21 MS. COLLINS: Object to form.

22 **A** Just the locations where there are cities.

23 **Q** Well, do you know what a land use cover map
24 is?

25 **A** Yes, in general terms. 10:05AM

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1 Q Okay, and did you observe or study any land
2 use cover maps for the IRW?

3 A No.

4 Q Did you, other than looking at Engel and
5 Fisher's report, make any determination of the 10:06AM
6 percentage of urbanization in the Illinois River
7 watershed as opposed to agricultural use?

8 A Yes. On the map I provided, you can see where
9 the towns are located in the IRW, and I could at
10 least get a general idea about the population 10:06AM
11 centers from that.

12 Q Did you quantify, sir, the percentage of
13 urbanization versus the percentage of agricultural
14 use in the Illinois River watershed?

15 A No. 10:06AM

16 Q The next one on your list were yards. What
17 information or data did you rely on with regard
18 to -- let me see if you used a particular --
19 fertilized yards' contribution of P in the
20 watershed? 10:06AM

21 A Where it's just likely to occur as people
22 fertilize their yard all the time to enhance grass
23 growth.

24 Q Okay, and did you make any particular study or
25 survey with regard to those growing yards in the 10:07AM

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1 Illinois River, how much fertilization they used?

2 **A** No.

3 **Q** Did you look at any USDA records on fertilizer
4 sales in the IRW?

5 **A** No. 10:07AM

6 **Q** Let's talk about golf courses. Tell me what
7 was the source of your data relied upon for your
8 report for the amount of golf course contribution of
9 phosphorus in the watershed?

10 MS. COLLINS: Object to form. 10:07AM

11 **A** Well, I know generically golf courses use N,
12 P, K to enhance the Bermuda grass, whatever. I had
13 a site in Florida once where that had occurred.

14 **Q** Okay. My question is for the IRW, sir. I
15 don't care about Florida. What do you know 10:08AM
16 specifically about the use of fertilizers on golf
17 courses in the IRW?

18 **A** I know I saw three golf courses at least when
19 I was out there which were adjacent to the river. I
20 don't know the specifics of fertilizer application, 10:08AM
21 but my understanding is golf courses use
22 fertilizers.

23 **Q** Okay, and do you know what kind of fertilizer
24 they use?

25 **A** What brand name or -- 10:08AM

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1 **Q** Is it commercial or poultry litter?

2 **A** As far as I know, it's not poultry litter. As
3 far as I know, it's commercial. Usually it's a
4 10-10-10 NPK ratio or a 16-13-10 or whatever formula
5 they elect to use. 10:08AM

6 **Q** How do you know they weren't using poultry
7 waste on the watershed -- on the golf courses in the
8 Illinois River watershed?

9 MS. COLLINS: Object to form.

10 **A** Because I believe they want to have smooth 10:08AM
11 fairways and smooth greens, so I assume they
12 wouldn't use poultry litter.

13 **Q** You're making an assumption, though. My
14 question is how do you know whether they do or they
15 don't? 10:08AM

16 MS. COLLINS: Object to.

17 **A** My understanding is they don't.

18 **Q** Okay, and your understanding is based upon an
19 assumption; correct?

20 **A** That's correct. 10:09AM

21 **Q** Now, tell the court, if you would, please --
22 you talk about pesticides containing phosphorus.
23 Tell me what pesticides are used in the IRW that
24 contain phosphorus.

25 **A** I recall seeing a study where diazinon was 10:09AM

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1 used in Arkansas and Oklahoma, and that was an issue
2 for those states, and so those types of pesticides,
3 I would assume, would be used where there was arable
4 land.

5 Q Okay. You made that assumption that they were 10:09AM
6 used. Did you -- have you made a determination what
7 is the percentage of phosphorus contained in the
8 fertilizer you just assumed was used?

9 A No.

10 Q Did you make any determination from any 10:09AM
11 published data how much pesticide use is occurring
12 in the IRW?

13 A Not as I recall right now.

14 Q Did you, for purposes of your opinions and
15 your work in this case, review any mass balances on 10:10AM
16 phosphorus for the Illinois River watershed?

17 MS. COLLINS: Object to form.

18 A I seem to recall that Fisher and/or Engel did
19 something along those lines.

20 Q You seem to recall, but my question is, did 10:10AM
21 you review it or did you just seem to recall seeing
22 it?

23 A I saw it. I didn't quantitatively review it
24 if that's what you mean.

25 Q All right. Did you quantitatively review any 10:10AM

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1 other mass balance work for the Illinois River
2 watershed?

3 **A** No.

4 **Q** Are you familiar with the mass balance
5 performed by Dr. Marc Nelson at the University of 10:10AM
6 Arkansas?

7 **A** No.

8 **Q** Did you at any time in preparation for your
9 work and opinions in this case inquire as to Cargill
10 how many birds they produced in the Illinois River 10:11AM
11 watershed for any period of time?

12 **A** No.

13 **Q** Did you inquire of Cargill for your report or
14 opinions given in your report as to the amount of
15 poultry waste generated by the turkeys they raised 10:11AM
16 in the Illinois River watershed?

17 MS. COLLINS: Object to form.

18 **A** No.

19 **Q** Did you inquire as to how much poultry waste
20 is generated at a single grow-out facility of 10:11AM
21 Cargill in the Illinois River watershed?

22 MS. COLLINS: Object to form.

23 **A** No.

24 **Q** Look at your Exhibit 1 and I want to direct
25 your attention to your CV area of that report. Do 10:12AM

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1 you have -- I guess where it starts your name at the
2 top, director of Geochemistry, president. Is that
3 where you are?

4 **A** Yes.

5 **Q** All right. I'd like for you to go through 10:13AM
6 that and identify for me any particular entry on
7 this CV that deals with the land-applied poultry
8 waste.

9 **A** I don't believe there's anything in here that
10 deals with land application of poultry waste, but 10:13AM
11 that wasn't really my focus of my study.

12 **Q** Okay. Can you tell me, sir, are there any
13 entries in your CV that deal specifically with any
14 study conducted by you in the Illinois River
15 watershed? 10:13AM

16 **A** I don't believe so.

17 **Q** All right. Can you tell me, sir, then, which
18 of any studies deal with the fate and transport of
19 phosphorus from fertilizer?

20 **A** Well, I've dealt with phosphorus before. 10:14AM

21 **Q** My question is specifically phosphorus from
22 fertilizer. Is there anything in your CV that deals
23 specifically with the fate and transport of
24 phosphorus from fertilizer applications?

25 **A** Well, really you're narrowing the scope so 10:14AM

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1 much because phosphorus is phosphorus, and so
2 fertilizer is just a form of phosphorus, and I've
3 got several studies in here that deal with
4 phosphorus.

5 Q I'm going to get to those. I just want to 10:15AM
6 quantify if there's any that deal specifically with
7 land-applied fertilizers and the fate and transport
8 of phosphorus from them.

9 A From fertilizers, no.

10 Q All right. Now, then, let's talk about the 10:15AM
11 other sources of phosphorus that you've studied.
12 Tell me which entry on your CV deals with the fate
13 and transport of phosphorus.

14 A There is one on Page 3, the second entry from
15 the top. 10:15AM

16 Q That's talking about the arsenic migration in
17 phosphoric acid?

18 A Yes.

19 Q All right, and tell the court, if you would,
20 what is the source of the phosphorus in the 10:15AM
21 phosphoric acid that you reviewed?

22 A The phosphoric acid.

23 Q Okay, but what was the source of the
24 phosphoric acid that you were studying?

25 A It was a constituent in styrene manufacturing. 10:15AM

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1 Q Okay, and styrene is what?

2 A Is an organic compound.

3 Q All right, and that was in Carson, California?

4 A That's correct.

5 Q What time frame was that; do you remember? 10:16AM

6 A Oh, it was probably the 1990s.

7 Q And tell me generally what you did regarding
8 the mechanism relating to arsenic migration with
9 phosphoric in groundwater.

10 A Well, there the phosphate had got into the 10:16AM
11 subsurface, and it out competed arsenic, which is in
12 the form of arsenate, and so it preferentially bound
13 soils kicking arsenic off and forming an arsenic
14 groundwater plume.

15 Q Okay. So that was a matter of a chemical 10:16AM
16 reaction then, and your real concern was arsenic in
17 that case; is that true then?

18 A No. Real concern is both phosphate and
19 arsenic.

20 Q Okay. What other studies, if any, did you 10:16AM
21 conduct involving fate and transport of phosphorus?

22 A Well, it occurs quite often in several of
23 these reports here, but you won't see it because
24 it's an adjunct to the focus of the project. So,
25 for example, in some of the bioavailability work 10:17AM

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1 I've done, I've looked at phosphorus when it
2 competes with soils for lead, but it won't
3 necessarily be called out. For example, there's a
4 paper that I was a co-author on, and it's on the top
5 of Page 12, and you can see it was published in 10:17AM
6 Environmental Science and Technology in 1994, and it
7 represented two to three years of work looking at
8 the stability of lead phosphates in soils --

9 Q Okay.

10 A -- what happens if you add phosphate to those 10:18AM
11 soils.

12 Q And were you dealing with groundwater there or
13 surface waters?

14 A That was with the soils.

15 Q Just soils? 10:18AM

16 A Just soils, stabilizing lead in soils.

17 Q Okay. Any other areas where you've dealt with
18 phosphorus, either surface runoff or groundwater
19 fate and transport?

20 A Another one on Page 4. This is down in 10:18AM
21 Pascagoula. Again, a question of looking at the
22 stability of lead and what happens when atmospheric
23 phosphorus is deposited on a port facility in this
24 case.

25 Q That's the first one under the heading metals 10:18AM

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1 specific?

2 **A** That's correct.

3 **Q** All right. Identify any others dealing with
4 phosphorus runoff or fate and transport through
5 either runoff or groundwater. 10:19AM

6 **A** Well, as I said, there are others in here that
7 incorporate phosphorus, but I don't recall
8 specifically as I sit here which one of those.

9 **Q** Well, let's narrow it. Can you just recall
10 anything that dealt with the runoff from 10:19AM
11 surface-applied or released chemicals that deal with
12 phosphorus in your CV?

13 **A** I'd have to go back through each of these and
14 check and see whether those are involved or not
15 because there's one here in the Humboldt River, 10:20AM
16 which I was looking at, that I may have had
17 phosphorus as a constituent in that analysis, but I
18 don't recall as I sit here today.

19 **Q** Okay, and it might have been here just because
20 you might have sampled for a number of chemical 10:20AM
21 elements, one of which might have been phosphorus,
22 or was it that the real concern in the case that
23 you're referring to?

24 **A** In that particular matter it was whether or
25 not mining or feedlots were contributing anions to 10:20AM

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1 the surface water of the Humboldt and looking at the
2 mass balance of the Humboldt, but I don't recall
3 specifically if phosphate was one of those
4 constituents.

5 Q Show me where that entry would be in your CV. 10:20AM

6 A That's Page 6, left-hand side, second from the
7 bottom.

8 Q Okay. Can you think of any other entries then
9 that deals with phosphorus runoff from land-applied
10 or released chemicals? 10:21AM

11 A I thought there was another one in here
12 somewhere, but I can't see it right now as I'm going
13 through this.

14 Q Would it have been the primary -- would
15 phosphorus have been the primary constituent of 10:21AM
16 concern in it or was it again maybe an adjunct as a
17 result of a globalized sampling of many elements?

18 A No. It was the primary focus. You know, I've
19 been looking at environmental chemistry for 30
20 years, and inevitably you see most of the elements 10:22AM
21 over that period of time.

22 Q Did you -- any of your previous work include
23 the specific --

24 A Oh, here it is. I just noticed it. Looking
25 at Page 7, top on the left-hand side, and you can 10:22AM

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1 see there we're looking at chlorinated and
2 phosphorylated pesticides in Tifton, Georgia.

3 Q All right, and were they from land-applied
4 chemicals or was this more of a soils groundwater
5 study? 10:23AM

6 A It was a manufacturing facility. It was a
7 groundwater and surface water runoff assessment.

8 Q Was it a point discharge or was it a
9 non-point?

10 A That was a point discharge. 10:23AM

11 Q So that I'm clear, do any of your studies that
12 you've listed or your work in your CV deal
13 specifically with the process of surface transport
14 of waste constituents from animal manure-applied
15 fields? 10:24AM

16 A I think when you look at that narrow a focus,
17 probably not.

18 Q All right. Have you and can you show me in
19 your CV if there is any work specifically with
20 regard to the study of the process of the transport 10:24AM
21 through infiltration of waste constituents for
22 animal manure-applied fields?

23 MS. COLLINS: Object to form.

24 A No, but I've done plenty of vadose zone
25 studies. 10:24AM

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1 **Q** And the vadose zone studies, did they deal
2 with animal-applied waste?

3 MS. COLLINS: Object to form.

4 **A** Not specifically, no.

5 **Q** In your work with regard to any fate and 10:24AM
6 transport of chemicals, is it important to know
7 where the alleged contaminant may have come from?

8 MS. COLLINS: Object to the form.

9 **A** I don't understand the question.

10 **Q** Okay. If you're studying fate and transport, 10:25AM
11 is it generally known what might be the source of a
12 constituent of concern in order then to assess what
13 needs to be done to stop it or repair the damage?

14 MS. COLLINS: Object to the form.

15 **A** Well, that's an extremely broad question. I 10:25AM
16 suppose in this case I was looking at a receptor,
17 being the Illinois River watershed, and trying to
18 see whether or not the 34, 35 sources, the Cargill
19 houses could reasonably be tied to the Illinois
20 River watershed. 10:26AM

21 **Q** Generally speaking, sir, if you're dealing
22 with a receptor such as a water body and you're
23 trying to determine if it has been contaminated,
24 don't you look to where the source may be?

25 MS. COLLINS: Object to form. 10:26AM

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1 **A** Well, the first thing you do is establish what
2 baseline conditions look like before you know if
3 there's an impact.

4 **Q** Let's go ahead and talk about those. In
5 establishing a baseline, what do you normally expect 10:26AM
6 to do from a scientifically approved method?

7 **A** Well, that's what I attempted to do because as
8 far as I can tell, the State hadn't collected
9 baseline samples for sediments or surface water, so
10 that's why I took the data and did my analysis to 10:26AM
11 determine what an impacted population might look
12 like above and beyond a baseline contribution from
13 all of the various sources into the IRW.

14 **Q** Okay. Is a baseline that you're referring to,
15 is that like a control or reference source? 10:27AM

16 MS. COLLINS: Object to form.

17 **A** No. Clearly there is a number of different
18 contributions to the IRW, and I believe the State's
19 experts have agreed to that theory, and so the
20 question is what does a baseline look like and how 10:27AM
21 do I identify what it looks like. So the baseline
22 is composed of all those sources we've talked about,
23 and as I did in my study, was to identify what that
24 number might look like.

25 **Q** Well, maybe we're not talking about the same 10:27AM

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1 terminology here, and we'll come back to it. Let me
2 finish this other line I was working on because I
3 will ask you some more about baseline. Is it fair
4 to say that your work has been primarily in the area
5 of mining and petrochemical contamination?

10:28AM

6 MS. COLLINS: Object to form.

7 **A** No. It's been a variety of different areas.
8 I've looked at pesticide chemistry. You can see the
9 various headings here. That's the sum of my body of
10 work.

10:28AM

11 **Q** And I was asking you to give me a
12 generalization. When I did look at it, my
13 generalization is it looked like most of it involved
14 mining and petrochemical contamination. Are you
15 saying it's different?

10:28AM

16 **A** Yes.

17 **Q** What do you think is your primary area of
18 expertise of concern in the past based upon your CV
19 that we have here?

20 MS. COLLINS: Object to form.

10:29AM

21 **A** First of all, environmental work clearly as
22 opposed to engineering. I've looked at
23 hydrogeology, geochemistry of a wide variety of
24 compounds in a wide variety of settings at a wide
25 variety of different types of facilities. That's

10:29AM

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1 how I view the body of work that I've undertaken in
2 the last 30 years or so.

3 **Q** Okay. Did you, sir, determine the chemicals
4 contained in poultry waste for purposes of rendering
5 your opinions? 10:29AM

6 MS. COLLINS: Object to form.

7 **A** Yeah. I actually had a look at nitrate as
8 well. We're talking about this earlier on, and I
9 did a quick scan on a 10 milligram per liter
10 threshold and looked at breakout of nitrates as 10:30AM
11 well.

12 **Q** Let me ask you this, sir: Did you look at any
13 published data with regard to the general
14 constituents found and the percentages that are
15 contained within poultry waste? 10:30AM

16 **A** Generally speaking, yes.

17 **Q** What was your source of information?

18 **A** I don't recall.

19 **Q** Okay. Did you, sir, make any determination
20 whether the poultry waste generated from turkeys is 10:30AM
21 any different significantly from that of broilers or
22 chickens?

23 **A** I think there's a paper in my considered by
24 documents that speaks to that.

25 **Q** And did you, sir, make any determination that 10:30AM

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1 there was any significant difference in the turkey
2 constituents in waste as opposed to a broiler
3 chicken constituents in waste?

4 **A** If I recall correctly, there's a bit of
5 difference in the binding by different constituents 10:31AM
6 between turkey waste and chicken litter, but if I
7 recall correctly, without having the document in
8 front of me, the concentrations are not dissimilar.

9 **Q** So the concentrations were similar is what
10 you're telling me, sir, in the poultry waste versus 10:31AM
11 the broiler waste?

12 **A** Poultry waste versus turkey --

13 **Q** I'm sorry, turkey waste versus broiler waste
14 if I misspoke. Those constituents are similar is
15 what you said? 10:31AM

16 **A** That's correct.

17 **Q** All right. Have you, sir, undertaken any
18 investigation or reviewed published literature to
19 know if arsenic behaves similar to phosphorus in the
20 soils in the IRW? 10:32AM

21 MS. COLLINS: Object to form.

22 **A** Well, it depends on the type of soil.

23 **Q** Did you determine what kind of types of soil
24 are found generally in the IRW?

25 **A** Yes. 10:32AM

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1 locations we're talking about, where they were?

2 **A** It would have been large river systems, such
3 as the Lower Willamette in Portland, for example,
4 some locations on the East Coast where I was looking
5 at migration of organic compounds in sediments. 10:34AM

6 **Q** Okay. Given that you only had the database
7 from CDM, did you make any determination in your own
8 mind, sir, whether or not the waters in the Illinois
9 River were elevated as to phosphorus?

10 MS. COLLINS: Object to form. 10:34AM

11 **A** Well, that was the -- I used the database. My
12 objective was to compare and contrast what was going
13 on throughout various areas of the watershed in
14 relation to the Cargill properties.

15 **Q** I understand that, but generally speaking did 10:34AM
16 you make a determination whether or not in fact the
17 waters that had been sampled were generally elevated
18 for phosphorus in the IRW?

19 MS. COLLINS: Object to form.

20 **A** That's too generic a question. In some places 10:35AM
21 they were elevated and in other places they weren't.

22 **Q** Okay. Did you study any of the water samples
23 from Lake Tenkiller or did you just look at the
24 river and streams?

25 MS. COLLINS: Object to form. 10:35AM

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1 **A** I looked at some of the data, but most of my
2 focus was on the rivers and streams.

3 **Q** Okay. Did you find whether or not the data
4 established elevated levels of phosphorus in the
5 Lake Tenkiller?

10:35AM

6 **A** I think it depends where you sample. Some
7 samples seem to be higher; some weren't.

8 **Q** Okay. As part of your examination for the
9 Cargill sites, did you assume that poultry waste
10 runs off and gets to the water?

10:35AM

11 MS. COLLINS: Object to form.

12 **A** I didn't make any assumption about that. I
13 looked at the particular sites to see whether I
14 thought that would be a possibility.

15 **Q** Okay. When you say you looked at it, you
16 didn't physically look at it prior to writing your
17 report in January, did you?

10:35AM

18 MS. COLLINS: Object to form.

19 **A** Not physically, but I understood what the
20 ground surface was like, and I had Dr. Kolm's report
21 of the general nature, the topography around these
22 Cargill properties that he had looked at.

10:36AM

23 **Q** What's the basis of -- is it Mr. or Dr. Kolm?

24 **A** Dr. Kolm.

25 **Q** What was the basis of Dr. Kolm's topography

10:36AM

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1 information provided to you other than the Google
2 maps that we see in your work?

3 **A** He looked at potential runoff paths from the
4 houses he was visiting. He noticed they were
5 grassy. I told him to look for reels and gullying. 10:36AM
6 I didn't see any of that occurring, and so there was
7 no obvious transport mechanism at that juncture,
8 which seemed to be supported by my analysis of the
9 data collected by the State.

10 **Q** Did you observe that there were gravel roads 10:36AM
11 leading up to the barns --

12 **A** Yes.

13 **Q** -- down to bar ditches near the streets or
14 road?

15 MS. COLLINS: Object to form. 10:37AM

16 **A** I know that there was gravel roads, yes.

17 **Q** Okay, and did you determine whether or not the
18 gravel roads were a mechanism or pathway for travel
19 of phosphorus or other waste constituents?

20 MS. COLLINS: Object to form. 10:37AM

21 **A** I was there when some of these gravel roads
22 were quite wet, and there was a question of standing
23 water because many of these houses were on the
24 uplands where it's remarkably flat.

25 **Q** Did you observe water running down bar ditches 10:37AM

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1 from edge of fields?

2 MS. COLLINS: Object to form.

3 **A** No. I saw water actually accumulating in the
4 ditches and not migrating anywhere.

5 **Q** Okay, and that was when you were there April 1 10:37AM
6 and April 2?

7 **A** That's correct.

8 **Q** And did it rain on those days?

9 **A** It had been raining beforehand, and then
10 driving back, I just noticed we were in the middle 10:37AM
11 of a downpour, and I couldn't see any obvious runoff
12 from the fields as we were driving by.

13 **Q** When you were driving back, specifically where
14 were you when you made that observation?

15 **A** Somewhere in between Tulsa and the IRW. 10:38AM

16 **Q** So you could have been in Mayes County?

17 **A** Could have been.

18 **Q** Okay. Did you stop during that downpour and
19 actually step out of the car and make any specific
20 observations or were they made while you were 10:38AM
21 traveling in a moving vehicle?

22 **A** It was raining so hard it would have been
23 almost suicidal to get out.

24 **Q** So your answer is you didn't get out of the
25 vehicle; correct? 10:38AM

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1 **A** That's correct.

2 **Q** And the vehicle was still moving at the time?

3 **A** That's correct.

4 **Q** So let me make sure I'm clear. Are you
5 providing an opinion that poultry waste, when land 10:39AM
6 applied in the IRW, will not run off at any time?

7 MS. COLLINS: Object to form.

8 **A** No. I'm talking about the Cargill properties,
9 and my assumptions are where the litter would have
10 been placed on the Cargill properties, looking at 10:39AM
11 the cause and effect in the Illinois River watershed
12 to see if there's evidence that can tie the Cargill
13 properties specifically to the data collected by the
14 State.

15 **Q** So we're clear, I'm going to ask it again. 10:39AM
16 Did you make any specific -- let me ask it again.
17 Are you providing an opinion that poultry waste,
18 when land applied in the IRW, will not run off at
19 any time, yes or no?

20 MS. COLLINS: Object to form. 10:39AM

21 **A** Well, it depends where it's applied. So I
22 can't answer the question. It's too generic.

23 **Q** So your answer is you don't know?

24 **A** That's correct, I don't know.

25 **Q** Okay, and you would agree with me that in 10:40AM

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1 order to know whether that occurs, information such
2 as topography would be necessary?

3 MS. COLLINS: Object to form.

4 **Q** Geology would be -- you can answer yes or no.

5 **A** Yes. 10:40AM

6 **Q** Geology would be necessary, yes or no?

7 MS. COLLINS: Object to form.

8 **A** Perhaps less so.

9 **Q** Hydrology would be necessary?

10 MS. COLLINS: Object to form. 10:40AM

11 **A** Yes, that's correct.

12 **Q** Rate of application would be necessary?

13 MS. COLLINS: Object to form.

14 **A** Well, depends -- there's two ways to look at
15 this. You can look at the data that is collected 10:40AM
16 and make an assertion about whether or not there's
17 been a response to some source of phosphorus or else
18 you can hypothesize, as has been done by the State,
19 using models.

20 Now, my purpose was to look at the data to see 10:40AM
21 whether or not there was a relation back to the
22 Cargill houses, and so I didn't come up with a
23 hypothetical analysis or a model analysis. I looked
24 at the data and made a determination based on the
25 data. So although it would be nice to know all 10:41AM

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1 those things if you're doing a hypothetical
2 evaluation, I used the data.

3 **Q** Would you agree with me, sir, that you used --
4 you yourself made no study from any specific site
5 where land-applied poultry waste exists did or did 10:41AM
6 not run off; is that a true statement?

7 MS. COLLINS: Object to form.

8 **A** No, because I looked at the Cargill
9 properties.

10 **Q** I'm talking about Cargill properties. You 10:41AM
11 made no specific study on any Cargill property to
12 determine whether or not there is any runoff of
13 poultry waste; correct?

14 MS. COLLINS: Object to form.

15 **A** That's not correct because I looked at whether 10:41AM
16 or not there was a response in the State's database
17 to the Cargill properties.

18 **Q** All right. Other than the State's database,
19 did you, sir, undertake any scientific study or
20 investigation to determine whether or not poultry 10:42AM
21 waste would not run off any Cargill site?

22 MS. COLLINS: Object to form.

23 **A** Other than my observations, no, and my
24 analysis of the topography and the proximity to the
25 receiving waters. 10:42AM

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1 **Q** And, again, you made no physical analysis
2 yourself for your original report; correct?

3 MS. COLLINS: Object to form.

4 **A** What do you mean by physical analysis?

5 **Q** You didn't go there physically to the sites 10:42AM
6 prior to your report in January for your
7 observations?

8 MS. COLLINS: Object to form.

9 **A** No, but I sent Dr. Kolm to look at some of
10 these sites for me. 10:42AM

11 **Q** And he took pictures for you; correct?

12 **A** That's correct.

13 **Q** Would you agree with me that elevation and
14 topography sometimes is not accurately depicted with
15 pictures? 10:42AM

16 MS. COLLINS: Object to form.

17 **A** No.

18 **Q** You don't agree with that?

19 **A** No. You can see where the swales are quite
20 easily. I've had experience with photographs and 10:43AM
21 aerial photography, and I had the Google Earth
22 application so I could easily see what the
23 topography looks like at these sites.

24 **Q** What other application, besides Google Earth,
25 did you rely on in order to determine whether or not 10:43AM

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1 land-applied poultry waste could run off the Cargill
2 sites?

3 MS. COLLINS: Object to form.

4 **A** That was the tool I used for my initial
5 evaluation. 10:43AM

6 **Q** I asked you what other tools did you use.

7 MS. COLLINS: Object to form.

8 **A** As I recall right now, that was the tool of
9 choice.

10 **Q** All right. Do you know what the resolution is 10:43AM
11 for the Google Earth?

12 **A** Well, it depends where you're looking.
13 Sometimes it's extremely accurate and you can see a
14 cow in the photographs. So the resolution of the
15 size of a cow I think. 10:43AM

16 **Q** Okay, and how would you quantify that
17 scientifically?

18 MS. COLLINS: Object to form.

19 **A** Well, I can see there's a cow in the picture
20 and say, oh, can I see smaller objects? Well, 10:44AM
21 probably not. So if it was a cow, it was probably
22 six feet long, and I don't know, five feet high.

23 **Q** Could you in fact see cows in all aspects of
24 the IRW where the Cargill sites were located?

25 **A** No, because it depends on when the photograph 10:44AM

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1 is taken and whether the cows are out at that
2 particular point in time.

3 Q Was it also dependent on the resolution, that
4 in some areas of the IRW the resolution from Google
5 Earth is not adequate to see a cow or distinguish a 10:44AM
6 cow?

7 A That is true, especially in Oklahoma.

8 Q Did you have any direct contact with any
9 Cargill company representatives other than this Tim
10 you identified that you do not know the last name of 10:44AM
11 in April of 2009?

12 A No.

13 Q When you talked to Tim, what did you discuss
14 with him or let me ask you, did you discuss anything
15 with Tim? 10:45AM

16 A I don't recall. What did we discuss? I asked
17 him to help me orient myself when I was at the sites
18 so I could depict the photographs accurately on the
19 map. I don't recall. Just general conversation I
20 suppose. 10:45AM

21 Q Did you obtain from Tim any specific Cargill
22 data relative to the growing practices used by
23 Cargill, growing practices of poultry?

24 MS. COLLINS: Object to form.

25 A Just generically about breeder houses and how 10:45AM

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1 they were grown but --

2 **Q** Did you obtain any numbers of birds, how long
3 birds are in the house, that kind of specific data?

4 **A** I seem to recall they spend eight weeks in one
5 type of house, brooder houses, and then twelve weeks
6 in another type of house, but that wasn't really the
7 focus of my investigation, so it was just in
8 passing.

10:46AM

9 **Q** Okay. Who made the decision to use the
10 location of the poultry barns for your analysis?

10:46AM

11 **A** I don't understand the question.

12 **Q** Well, you've said you looked at the Cargill
13 sites specifically and the adjoining land around it.

14 **A** Uh-huh.

15 **Q** Who made the decision to look at the site of
16 the barn for your analysis? I mean, you've noted on
17 your report -- every time we look at a photo, you've
18 noted the location of the barns, have you not
19 basically?

10:46AM

20 **A** Yes.

10:47AM

21 **Q** Who made the decision to make that as your
22 focal point in your analysis?

23 **A** That was what I was asked to do by legal
24 counsel.

25 **Q** Okay, and did -- who provided you the

10:47AM

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1 locations of those sites for your analysis?

2 **A** I got those from Miss Collins.

3 **Q** Okay, and I think, if I'm not mistaken, there

4 is a PDF of what appeared to be a spreadsheet that

5 shows the lat-long and the name of a grower and

10:47AM

6 maybe some other data; is that correct?

7 **A** That's correct.

8 **Q** And is that what you relied on; is that what

9 you used to determine the sites of these barns?

10 **A** Yes.

10:47AM

11 **Q** All right. Do you know whether or not these

12 barns have earthen floors or some other types of

13 floors?

14 **A** I didn't go into the barns. I don't know.

15 **Q** Do you agree with me the barns, from what

10:48AM

16 you've observed, have roofs on them; these are

17 covered structures; correct?

18 **A** That's correct.

19 **Q** Did you or others for you inspect any actual

20 poultry waste storage facilities at the Cargill

10:48AM

21 locations?

22 **A** No.

23 **Q** So for purposes of your analysis, you assumed

24 that the barn was the location for what would be the

25 source of any contaminant when you compared it to

10:48AM

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1 the State's database; is that correct?

2 MS. COLLINS: Object to form.

3 **A** Well, I don't believe these folks consider the
4 phosphorus and nitrogen to be a contaminant. I
5 think they believe it to be a source of fertility 10:49AM
6 for the fields.

7 **Q** Let me ask the question this way: So for
8 purpose of your analysis, you assumed that the barn
9 was the location for what would be the source of the
10 phosphorus when you compared it to the State's 10:49AM
11 database; is that correct?

12 MS. COLLINS: Object to form.

13 **A** That area would be the location of the applied
14 litter, yes.

15 **Q** All right. Did you observe, review or study 10:49AM
16 any of the Oklahoma Department of Agriculture
17 records for Cargill growers?

18 **A** No.

19 **Q** Did you review or study any nutrient
20 management plans for Cargill growers? 10:49AM

21 **A** No.

22 **Q** Did you review or others for you review any
23 poultry waste land application records for Cargill
24 growers, including Cargill when I say Cargill?

25 MS. COLLINS: Object to form. 10:50AM

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1 applied?

2 MS. COLLINS: Object to form.

3 **A** Well, as I said, I had no other information to
4 reasonably assume they were taken anywhere else, and
5 my understanding is it was used as a resource to
6 actually facilitate grass growth. So I assume they
7 want to do that as close as possible to minimize
8 transport costs.

10:51AM

9 **Q** Okay. Did you discuss with any Cargill
10 growers the length that they would transport poultry
11 waste from the barn to the application sites?

10:51AM

12 **A** No.

13 **Q** So you don't know what distance the poultry
14 waste, when removed from the barns, may be
15 transported before it's applied; is that correct?

10:52AM

16 MS. COLLINS: Object to form.

17 **A** Well, that's correct. I assumed it would be
18 proximal to the houses.

19 **Q** Did you inquire and determine whether or not
20 the -- that all of the Cargill sites in fact land
21 applied on location where the barns were with the
22 immediately adjoining lands?

10:52AM

23 MS. COLLINS: Object to form.

24 **A** That was my assumption.

25 **Q** Okay, but you didn't make any specific inquiry

10:52AM

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1 to determine if that assumption was accurate;
2 correct?

3 **A** That's correct.

4 **Q** Okay. Did you ask anyone if they in fact land
5 applied on their sites at all? 10:52AM

6 MS. COLLINS: Object to form.

7 **A** No.

8 **Q** Did you ask anyone if they sold their poultry
9 waste to others who then land applied?

10 MS. COLLINS: Object to form. 10:53AM

11 **A** No.

12 **Q** Did you make any inquiry as to whether poultry
13 waste from Cargill locations was transported outside
14 the IRW?

15 MS. COLLINS: Object to form. 10:53AM

16 **A** No.

17 **Q** In your opinion is rainfall necessary in this
18 case to provide a transport mechanism of the
19 land-applied poultry waste?

20 MS. COLLINS: Object to form. 10:53AM

21 **A** It depends on where it is. We've had that
22 conversation before.

23 **Q** Well, where would it need to be that rain
24 wouldn't be necessary for the poultry waste
25 constituents to transport? 10:54AM

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1 MS. COLLINS: Object to form.

2 Q Transport to the water surfaces?

3 MS. COLLINS: Same objection.

4 A Well, it depends if there's grass that's going
5 to prevent transport. Depends on the location. We 10:54AM
6 talked about topography and all of those other
7 elements.

8 Q If the rate of application for phosphorus for
9 the grass exceeds agronomic rates, does having grass
10 there matter with regard to whether it would 10:54AM
11 transport or not?

12 MS. COLLINS: Object to form.

13 A Well, yes, because then you might have
14 percolation of excess phosphorus down to the B
15 horizon of the soil where it could precipitate out 10:54AM
16 with the aluminum and the iron.

17 Q Okay. Could it also find its way to the
18 groundwater, that is, the phosphorus find its way to
19 the groundwater?

20 A Based on the data I've seen, I haven't seen 10:55AM
21 much evidence of that.

22 Q And the data you've seen is solely the CDM
23 database?

24 A That's correct.

25 Q Did you in your analysis obtain any historical 10:55AM

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1 rainfall occurrences at or near the Cargill growing
2 facilities in the IRW?

3 MS. COLLINS: Object to form.

4 **A** No.

5 **Q** Did you obtain any historical rainfall 10:55AM
6 occurrences at or near the sampling sites used in
7 the CDM database?

8 MS. COLLINS: Object to form.

9 **A** No.

10 **Q** We need to stop to replace the tape. Let's 10:55AM
11 take a break and we'll come back.

12 VIDEOGRAPHER: We are now off the Record.
13 The time is 10:56 a.m.

14 (Following a short recess at 10:56
15 a.m., proceedings continued on the Record at 11:07
16 a.m.)

17 VIDEOGRAPHER: We are back on the Record.
18 The time is 11:07 a.m.

19 **Q** Dr. Davis, in your summary of opinions you say
20 that there have been no site-by-site sampling 11:07AM
21 campaigns and no loading computations to demonstrate
22 that individual Cargill locations have affected
23 surface waters. So that we're clear, there have
24 been no water samples taken by you or your team for
25 your opinions; correct? 11:07AM

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1 **A** Yes. I just used the State's database.

2 **Q** Okay, and so I'm going to try and shorten it.

3 So no soils, sediments, water samples obtained by
4 you for study or your opinions; correct?

5 **A** That's correct. 11:07AM

6 **Q** There were no edge of field samplings
7 conducted by your team?

8 **A** Nor by the State.

9 **Q** Huh?

10 **A** Nor by the State. 11:07AM

11 **Q** Okay. You're saying that the State did not
12 have any edge of field samples?

13 **A** At the Cargill properties as far as I'm aware.

14 **Q** Okay, and you or your team did not conduct any
15 geoprobe sampling anywhere? 11:08AM

16 **A** That's correct.

17 **Q** And when we talk about water, there's no
18 sampling of any well water or other groundwater by
19 you or your team; is that correct?

20 **A** That's right, and no spring samples either. 11:08AM

21 **Q** Thank you. Did you obtain any data with
22 regard to flow rates of streams or the Illinois
23 River for purposes of giving your opinion in this
24 case?

25 **A** No. 11:08AM

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1 **Q** Did you review any USGA flow rate data in this
2 case?

3 MS. COLLINS: Object to form.

4 **A** No.

5 **Q** Did you observe whether the CDM samples were 11:08AM
6 divided into base flow and high flow?

7 MS. COLLINS: Object to form.

8 **A** I know there was a set of Isco samplers set
9 up, and some of the locations have got multiple
10 samples collected over different periods of time, 11:09AM
11 and I understand that in the statement of work that
12 Dr. Olsen generated the goal was to collect samples
13 from rising limbs and falling limbs of flood events.

14 **Q** Did you observe that there was in fact that
15 data, that is, high flow and low flow data, in the 11:09AM
16 State's database?

17 MS. COLLINS: Object to form.

18 **A** I haven't seen it correlate with flow. I know
19 there's multiple chemistry samples collected over
20 time. 11:10AM

21 **Q** Did you -- did you observe that samples were
22 identified as being either high flow or low flow in
23 the State's database?

24 MS. COLLINS: Object to form.

25 **A** As I understand it, that was at the three 11:10AM

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1 locations, just upstream of Tenkiller Lake.

2 Q So at those locations only, are you telling me
3 you did observe that there was high flow and low
4 flow data in the State's database?

5 A I believe the objective was to collect those 11:10AM
6 types of data from twelve different locations.

7 Q I'm asking you, sir, though, what you observed
8 in the database, and what is -- and if in fact did
9 you observe that the State's database contained
10 descriptions that high flow and low flow samples 11:10AM
11 were obtained?

12 MS. COLLINS: Object to form.

13 A I don't recall looking at the specific stage
14 when the chemistry was collected, no.

15 Q So is your answer then that you did not 11:11AM
16 observe that there were specific descriptions
17 showing a sample being high flow as opposed to base
18 flow?

19 MS. COLLINS: Object to form.

20 A I didn't specifically go back and check for 11:11AM
21 that, no.

22 Q All right. Did you observe whether the
23 samples were described as being filtered or
24 non-filtered in the database that you worked with?

25 MS. COLLINS: Object to form. 11:11AM

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1 **A** Yes, I'm aware there was filtered and
2 non-filtered samples.

3 **Q** Did you observe if there was different testing
4 techniques used for the soils, waters or sediments
5 in the State's database? 11:11AM

6 MS. COLLINS: Object to form.

7 **A** Yes. There was a variety of types of
8 phosphorus analyzed.

9 **Q** All right. For your work in this case, did
10 you sort the sample database of the State in 11:12AM
11 accordance with filtered, non-filtered, high or low
12 flow?

13 **A** No. I took the average phosphorus where there
14 was an average phosphorus concentration. The vast
15 majority of samples were one location, one time, one 11:12AM
16 concentration.

17 **Q** Did you ever attempt to plot every sample in
18 the State's database for purposes of your work?

19 MS. COLLINS: Object to form.

20 **A** I'm not quite sure I understand what you're 11:12AM
21 asking.

22 **Q** Well, you said earlier when we looked at a
23 couple of views in your Google Earth aerials that
24 there was a sample that was supposedly on there but
25 wasn't shown. Was it because it was at the same 11:12AM

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1 site or was it just a site so close in the Google
2 aerial that it wasn't visible?

3 A Yes. As you pan in closer and closer, those
4 samples separate out and that was the objective of
5 the errata, to clearly show where there was multiple 11:13AM
6 samples, what those concentrations looked like.

7 Q Did you plot then -- if at the same site there
8 were multiple samples taken over a period, did you
9 in fact plot all of the samples taken?

10 A I've seen on our database where we've gone 11:13AM
11 back in and looked at replicate samples from the
12 same locations over periods of time, and there's
13 variability in the chemistry, and so sometimes it's
14 high, sometimes it's low, depends on the season,
15 depends on the flow rate I suppose, and so to 11:13AM
16 simplify the exercise, I simply averaged those
17 concentrations.

18 Q So in every case, you would have averaged --
19 let's say there was twelve samples at that
20 particular location. You would have averaged those 11:14AM
21 twelve samples each time for -- that's not a good
22 question. For a single location where there were
23 multiple samples, did you in fact average it?

24 MS. COLLINS: Object to form.

25 A Yes. 11:14AM

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1 yes.

2 Q Okay. What criteria did you use to determine
3 if a sampling location was either upgradient or
4 downgradient from a Cargill site?

5 A I looked at the physical features on Google 11:15AM
6 Earth to determine where the tributary would enter
7 the Illinois River watershed, and I looked at the
8 location on northings-eastings of the samples to see
9 how that related to where the Cargill house would
10 potentially meet up -- where the tributary of a 11:16AM
11 Cargill house would potentially meet up with the
12 river.

13 Q Tell me -- the court reporter would like to
14 know it, too. What is the term you used, northern
15 eastings or something to that effect? I'm not sure 11:16AM
16 I understood what you said and what that means.

17 A Northings and eastings is the same as latitude
18 and longitude.

19 Q I'm sorry, I know what that means. I just
20 didn't understand it when you said it the first 11:16AM
21 time. I'll probably use lat-longs.

22 A That's fine.

23 Q So when I use that term, you'll understand it?

24 A If I use northings and eastings, that's what
25 I'm used to, and you'll -- 11:17AM

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1 **Q** How long has it been since you've been in
2 America?

3 **A** Oh, 1976 I first encroached upon these shores.

4 **Q** You've been here since basically?

5 **A** Pretty much, yes. 11:17AM

6 **Q** All right. Did you use anything else, back to
7 the original question, to determine whether a site
8 is upgradient or downgradient other than what you've
9 told me?

10 **A** Do you mean upstream or downstream or do you 11:17AM
11 mean physically --

12 **Q** Upgradient or downgradient. Did you do
13 anything beside rely on Google Earth and your
14 lat-longs to determine whether a site was upgradient
15 or downgradient? 11:17AM

16 MS. COLLINS: Object to form.

17 **A** I'm not quite sure what you mean by upgradient
18 or downgradient. From where?

19 **Q** From a sample site. Let's put it in
20 perspective. And I agree. It's probably a bad 11:18AM
21 question. From the sample sites you were comparing
22 and in some instances I think you talk about what is
23 upgradient or downgradient. I'm just trying to find
24 out what tools, what criteria you relied on in order
25 to make any determination whether a site or sample 11:18AM

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1 location was up or downgradient from the other.

2 A I think I understand where you're coming from.

3 It's a bit more complicated than that, though,

4 because Cargill properties aren't on the main stem,

5 and so what you have to do is -- or a tributary to 11:18AM

6 the main stem, so what you have to do is see where

7 the physical relationship between the Cargill

8 property is to a feeder drainage and then make a

9 determination where that feeder drainage accesses

10 the creek or river and then see where the samples 11:18AM

11 are in relation to that junction.

12 Q What tools did you use to do that?

13 A I used my knowledge of geomorphology, and I

14 traced the tributaries to the streams to see where

15 they intersected with the streams. 11:19AM

16 Q Okay. What tools did you use in order to

17 apply your knowledge of geomorphology; what tools

18 did you use, physical tools?

19 A I used Google Earth for that.

20 Q Anything else? 11:19AM

21 A Not that I recall right now.

22 Q When there were -- let's talk about two

23 different instances. If we're looking at a sample

24 site with a single data point and another sample

25 site with a single data point, what did you -- did 11:20AM

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1 you rely then solely on Google Earth to determine
2 flow of the drainage area; is that what I understand
3 you to say?

4 A Yes. I know how river systems work, so I
5 could tell which direction the flow is going in the 11:20AM
6 river system by looking at the orientation of the
7 junctures between the receiving water and the
8 tributary.

9 Q What kind of drainage system do you see in the
10 Illinois River watershed; how would you describe it 11:20AM
11 scientifically?

12 A I don't recall to be honest what the
13 scientific term is, but clearly it's a series of
14 waters coming together with a V shape, and so you
15 can determine from the V shape which direction the 11:21AM
16 flow is going.

17 Q Okay. So if you have two locations, sampling
18 locations, one is upstream from a Cargill site and
19 one is downstream from a Cargill site, if there are
20 multiple samples at each of those sites, in every 11:21AM
21 instance you would have averaged them to make your
22 analysis?

23 MS. COLLINS: Object to form.

24 A Well, that wasn't the case, so -- I mean,
25 normally it's just one sample. 11:21AM

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1 **Q** All right.

2 **A** There may have been an occasional instance --
3 I think maybe three samples across the entire
4 database I looked at where that was actually the
5 case. 11:21AM

6 **Q** What was actually the case, that it was
7 averaged?

8 **A** That there were multiple samples. Most of the
9 time there was just one sample event for the vast
10 majority. 11:21AM

11 **Q** In those instances where you observed multiple
12 samples existing for that sample location, did you
13 always average it?

14 MS. COLLINS: Object to form.

15 **A** Yes. 11:22AM

16 **Q** And so if those multiple samples were taken
17 over a period of one year or more, you would have
18 ignored the time frame by having averaged that
19 sample; would you agree?

20 MS. COLLINS: Object to form. 11:22AM

21 **A** Yes. When I looked at the information, it was
22 cyclical or up and down, and so I took the average,
23 yes.

24 **Q** So if by taking the average, you've ignored
25 the time frame and if you have a down slope or a 11:22AM

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1 downstream sample location that the date of that
2 sample is actually in time before any date in your
3 average sample, how is that relevant --

4 MS. COLLINS: Object to form.

5 Q -- for your comparison purpose? 11:22AM

6 A I don't have the first understanding of what
7 you said.

8 Q You don't?

9 A No.

10 Q Okay. Well, let's say if I take a sample 11:22AM
11 upstream from a Cargill site and I take it on
12 January 1, all right, and you rely on that sample
13 and that data; correct?

14 MS. COLLINS: Object.

15 Q In your analysis that's what you would do; 11:23AM
16 right?

17 A Right.

18 Q You look at the downstream, and what if the
19 downstream data is one year preceding that; are
20 those still relevant for purposes of your analysis? 11:23AM

21 A I don't know. It depends on looking at the
22 information and seeing if that's relevant or not. I
23 mean, I looked at the data as it was supplied to me,
24 and I did the best I could to understand the spatial
25 relationships between those data points that you're 11:23AM

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ANDY DAVIS, PhD, 4-7-09**101**

1 talking about and see what the relationship looked
2 like because it was all collected in the time frame
3 of '05 and '06.

4 **Q** Wasn't there some '07 data also?

5 **A** Yeah, there may have been. So presumably I'd 11:23AM
6 have had a sample that was collected in '05
7 upstream, for example, in your hypothesis, and then
8 if there was a sample location downstream, there
9 might be an '05 in subsequent samples collected.

10 **Q** I understand that, and I'm going to ask you my 11:24AM
11 question again, and that is, what if you had a
12 sample that was upstream in '06 and a downstream
13 sample in '05; is that relevant for your analysis in
14 this case?

15 **A** Well, yes. 11:24AM

16 **Q** How is it relevant?

17 **A** Because I'm still comparing concentrations
18 downstream from a Cargill facility, and if there had
19 been a contribution from the Cargill facility, there
20 would still be -- and if this hypothesis of yours is 11:24AM
21 correct that Cargill released to the river, then
22 we'd still see a higher phosphorus concentration in
23 '05.

24 **Q** Than that in '06 that was upstream?

25 **A** Well, '06, that would become just a basis. If 11:24AM

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ANDY DAVIS, PhD, 4-7-09**102**

1 it's an upstream concentration that's lower as many
2 of them might have been or there might have been
3 another source for that if it was higher, then still
4 reflecting what was going on at that particular
5 point in time, yes.

11:25AM

6 **Q** Well, if those two points in time are months
7 apart, you're telling me it's still relevant for
8 your analysis?

9 **A** Yes.

10 **Q** Okay. You made no determination as to the
11 flow rates in any streams or rivers in the Illinois
12 River for your analysis; correct?

11:25AM

13 **A** That's correct. The information wasn't
14 available from the State's database in the areas in
15 which I was interested.

11:25AM

16 **Q** I'm sorry. Say that answer again.

17 **A** The information was not available on flow
18 rates for the areas I was interested as far as I
19 could determine.

20 **Q** But it is available through the USGS, is it
21 not?

11:25AM

22 **A** Well, down near Lake Tenkiller and perhaps a
23 couple of other stations, but that's way too broad
24 of a picture to be able to understand what is
25 happening at the local house level, if you will.

11:26AM

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ANDY DAVIS, PhD, 4-7-09**103**

1 **Q** Okay, but you've testified, have you not, you
2 don't know where the application of waste occurred;
3 correct?

4 MS. COLLINS: Object to form.

5 **A** For the Cargill facilities, I assume it was 11:26AM
6 proximal to the house.

7 **Q** Okay. If I were to tell you that many of the
8 Cargill facilities have not land applied waste on
9 their facilities in the last few years, would that
10 change your opinion in this case? 11:26AM

11 MS. COLLINS: Object to form.

12 **A** Not necessarily, no.

13 **Q** So are you relying then on the phosphorus
14 levels in the soil for a contribution determination?

15 MS. COLLINS: Object to form. 11:26AM

16 **A** I don't understand the question.

17 **Q** Well, if you don't know where the land-applied
18 waste is occurring and if it's assuming it's not
19 occurring at a site, a Cargill site, but is in fact
20 occurring somewhere else, isn't your analysis for 11:27AM
21 that particular site of no benefit?

22 MS. COLLINS: Object to form.

23 **A** Well, I don't know where the litter would have
24 been applied other than the house. So I'd have to
25 know that. Then I'd have to know what other 11:27AM

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ANDY DAVIS, PhD, 4-7-09**104**

1 potential contributions of phosphorus were in the
2 area.

3 Q Let's -- just let me give you a hypothetical
4 then. Let's just assume that from this particular
5 Cargill location, all the poultry waste in the time 11:27AM
6 frame that you looked at in the State's data was
7 land applied two miles away or five miles away from
8 the site. Would that have any bearing on your
9 opinion today if you then knew that?

10 MS. COLLINS: Object to form.

11:27AM

11 A Not necessarily. I'd have to go look at that
12 particular location and see what the physical
13 attributes were of that site and see what other
14 potential contributors were in the area.

15 Q Okay, but as to the Cargill site, the opinion 11:28AM
16 that you've given based upon an assumption that it
17 was applied at that location, if that assumption is
18 wrong, your opinion about that site may very well be
19 wrong, too; correct?

20 MS. COLLINS: Object to form.

11:28AM

21 A No. My opinion about that site would
22 certainly hold still because it wouldn't have
23 released any releases from that site.

24 Q All right, because your opinion isn't there
25 isn't any harm from any site from the Cargill 11:28AM

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ANDY DAVIS, PhD, 4-7-09**105**

1 locations; correct?

2 MS. COLLINS: Object to form.

3 **A** No. My opinion is that there's no evidence of
4 contribution to the surface waters of the Illinois
5 River watershed based on the data that the State has
6 collected from those specific locations.

11:28AM

7 **Q** All right, but you would agree with me, you
8 don't know where it was applied and you've not
9 undertaken an examination yourself to see if these
10 other locations where it is in fact being applied
11 has any effect on the Illinois River watershed; is
12 that a correct statement?

11:28AM

13 MS. COLLINS: Object to form.

14 **A** I have no knowledge where it may have been
15 applied other than the facilities.

11:29AM

16 **Q** Isn't it important to know where it's being
17 applied in order to make some determination whether
18 it's getting into the water in the Illinois River
19 watershed?

20 **A** Well, as I said, I assumed it was applied
21 adjacent to the facilities.

11:29AM

22 **Q** Other than your assumptions, sir, I know
23 you've told me that several times and I know you've
24 made that assumption, what I'm asking you, isn't it
25 important to know where it's actually applied to

11:29AM

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1 give an opinion whether or not Cargill poultry waste
2 has had any effect in the Illinois River watershed?

3 MS. COLLINS: Object to form.

4 **A** Well, my opinion was very focused to
5 particular locations where I understood that poultry 11:29AM
6 waste to be applied. I haven't looked at other
7 facilities or other areas outside of those 35
8 locations. So I can't really answer the question.

9 **Q** And so as a result of not having looked at
10 those other locations, you don't know whether or not 11:29AM
11 the poultry waste applied in those locations have in
12 fact impacted the water quality in the Illinois
13 River watershed; correct?

14 MS. COLLINS: Object to form.

15 **A** That's correct. 11:30AM

16 **Q** Okay.

17 **A** You'd have -- there's a multitude of issues
18 you'd have to investigate to make that
19 determination.

20 **Q** And did you investigate all the multitude of 11:30AM
21 those issues for each and every Cargill site in
22 doing your work today or in this case?

23 MS. COLLINS: Object to form.

24 **A** Yes. I looked at to try and understand what
25 was going on in the area around the receiving waters 11:30AM

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ANDY DAVIS, PhD, 4-7-09**107**

1 from the Cargill facility, if that was in fact the
2 case.

3 Q So you're telling me today that you've looked
4 at every issue of these multitude of issues you
5 think are important for each and every site location 11:30AM
6 for Cargill?

7 A No. I'm saying I've done an analysis of the
8 35 Cargill locations.

9 Q But didn't you say that analysis would require
10 looking at a multitude of issues? 11:31AM

11 A Well, I have for the locations. I've tried to
12 understand what is the situation in relation to the
13 State's database where that water is coming in or
14 may be coming in from the Cargill properties.

15 Q Is it important to know -- let's just go with 11:31AM
16 your assumption assuming there has been waste
17 applied on a Cargill location, and would it be
18 important to know when rainfall might have occurred
19 at that site as to know whether that samples would
20 reflect in fact if poultry waste is getting into the 11:31AM
21 water?

22 MS. COLLINS: Object to form.

23 A No. I think the important thing is to look at
24 the State's data, look at the database and see if
25 there's an unambiguous evidence that in fact a 11:31AM

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ANDY DAVIS, PhD, 4-7-09**108**

1 particular poultry house has been impacting the
2 river.

3 **Q** And your analysis comes from a very small
4 drainage area from each site; is that a fair
5 statement? 11:32AM

6 MS. COLLINS: Object to form.

7 **A** For the most part, but the data that's been
8 collected should reflect what's going on in those
9 drainages.

10 **Q** And to the extent that there is some 11:32AM
11 contribution that may not be measured as close to
12 the site as the samples you've reviewed, would there
13 not be a possibility of cumulative effect further
14 downstream that you've not looked at?

15 MS. COLLINS: Object to form. 11:32AM

16 **A** Well, for example, one of the sites was a
17 state sample eleven miles downstream from the
18 Cargill house, and I don't see how you can possibly
19 make any inferences from a site sample that's being
20 collected that far down from the potential source. 11:32AM

21 **Q** How many sites were in the drainage area of
22 that eleven miles downstream?

23 **A** I believe it was just one, but I'd have to go
24 back and refresh my memory.

25 **Q** Okay. If there are -- but you expand this and 11:33AM

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ANDY DAVIS, PhD, 4-7-09**109**

1 look at a larger watershed basis, even if it's a
2 subbasin and there are multiple Cargill houses in
3 the subbasin, how do you know whether or not there's
4 some cumulative effect of the land application with
5 turkey waste and that of broiler waste?

11:33AM

6 MS. COLLINS: Object to form.

7 **A** Well, I looked at the data to see if in fact
8 the first downstream dataset supported that
9 hypothesis, and I decided that it didn't based on my
10 analysis.

11:33AM

11 **Q** And that's -- and part of your analysis is
12 based on the fact you don't know when it was
13 applied; correct? Correct?

14 MS. COLLINS: Object to form.

15 **Q** Your analysis does not tell you when the waste
16 was applied?

11:33AM

17 **A** I know it's been applied in the last few years
18 generically.

19 **Q** Okay, and you don't -- and you didn't observe
20 or look at any rainfall data to know when those
21 events have occurred relative to an application;
22 correct?

11:34AM

23 **A** That's correct.

24 **Q** Okay, and you've done nothing to study the
25 groundwater flow of any leachate of poultry waste,

11:34AM

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ANDY DAVIS, PhD, 4-7-09

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1 have you?

2 **A** Yes. I generally know that it flows to
3 southwest of groundwater, and I've looked at the
4 groundwater samples in the State's database when
5 it's proximal to the Cargill locations.

11:34AM

6 **Q** And did you study the faults and fractures at
7 each of the site locations to know exactly where the
8 groundwater flow is?

9 **A** No. I'm assuming the State put their wells in
10 the places where they thought would best represent
11 the potential groundwater flow from these sites.

11:34AM

12 **Q** Okay. Do you know whether or not the State
13 was in fact targeting specifically Cargill sites?

14 **A** I don't know.

15 **Q** If you're looking at a sample that is a day
16 before a rainfall event, would that necessarily
17 reflect the runoff from that rainfall event?

11:34AM

18 MS. COLLINS: Object to form.

19 **A** Sample of what? Edge of field or --

20 **Q** Sample of a nearby water resource.

11:35AM

21 **A** I don't know.

22 **Q** Okay. So is it even possible that a sample
23 taken a day before a rainfall event would have any
24 effect from that subsequent rainfall event?

25 MS. COLLINS: Object to form.

11:36AM

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ANDY DAVIS, PhD, 4-7-09**111**

1 **A** I just used the data that was in the database.
2 I can't really talk about hypotheticals. So I used
3 the data in the database to see in my opinion if the
4 State had made a valid showing that the Cargill
5 locations had impacted the IRW. As I said before, I
6 didn't find that causal response in the data, so
7 that's what I've got to go on. Everything else is
8 hypothetical. It's just the data.

11:36AM

9 **Q** But you've agreed with me that you've averaged
10 multiple samples when they were available, and those
11 could be over a period of a year; correct?

11:36AM

12 **A** But that's in a very -- in one or two
13 instances. If you look at the dataset as a whole,
14 that's not the case.

15 **Q** So for purposes of your analysis, the time at
16 which the sample was taken is really not of
17 importance to you; correct?

11:36AM

18 **A** I just used the data that was available in the
19 database, and I assumed that I looked for cause and
20 effect in the database. That's all I can do.

11:37AM

21 **Q** And as part of that cause and effect, did you
22 take into consideration the timing of any of the
23 samples shown in the database?

24 **A** Well, yeah, insomuch as they're being
25 collected over a period of three or four years, and

11:37AM

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ANDY DAVIS, PhD, 4-7-09**112**

1 this process has been going on for many more years
2 than that, so I would expect if there was a chronic
3 release from a particular location, you would see it
4 in the database, either in the sediment or the
5 surface water.

11:37AM

6 **Q** What was the authority that you used to limit
7 your sample focus -- let me restate that. What was
8 the authority you used to limit your focus on the
9 samples to within the two-mile radius?

10 **A** I believe some reference in Engel or Fisher
11 about distribution of litter, but I really focused
12 on the nearest proximal sample to the particular
13 facility.

11:38AM

14 **Q** If you don't know where the land application
15 is occurring, how is it you can limit it to a
16 two-mile radius?

11:38AM

17 MS. COLLINS: Object to form.

18 **A** Well, as I said, I assumed it was actually at
19 the facility.

20 **Q** Did you make any inquiry to determine whether
21 or not a different integrator -- I'm sorry. Let me
22 rephrase it. Did you make any determination to know
23 whether or not a different grower's poultry waste
24 was being land applied on any of the Cargill sites?

11:38AM

25 MS. COLLINS: Object to form.

11:39AM

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1 **A** I don't know. I haven't studied that.

2 **Q** Do you agree that you have ignored any
3 groundwater contamination that would contribute to
4 the levels of P in the water in sediments?

5 MS. COLLINS: Object to form. 11:41AM

6 **A** No.

7 **Q** And how did you consider the groundwater
8 contamination as a possible contributor to the
9 levels of phosphorus in the water and sediments?

10 MS. COLLINS: Object to form. 11:41AM

11 **A** Wherever the State had collected groundwater
12 data in the vicinity of the Cargill houses, I
13 inspected that data to see if it was reasonable that
14 phosphorus levels were above what might be
15 considered a natural background concentration in 11:41AM
16 those wells. I didn't find any cases where that was
17 the -- appeared to be the effect.

18 **Q** What was the background level you relied on
19 then in that instance?

20 **A** I seem to recall I was looking right at about 11:41AM
21 10 parts per billion.

22 COURT REPORTER: Billion?

23 **A** Billion.

24 **Q** And that was in soil or water or sediment;
25 what was your -- 11:42AM

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ANDY DAVIS, PhD, 4-7-09**115**

1 **A** That would be in groundwater. We'd have to
2 look at specific locations where that actually
3 was -- there was actually groundwater data.

4 **Q** Okay. Are you familiar with the term baseline
5 as it's used in natural resource damages under
6 CERCLA?

11:42AM

7 **A** Yes.

8 **Q** And you used the term baseline in your report.
9 Are you intending to mean the same as it's used in
10 CERCLA for natural resource damages?

11:42AM

11 **A** No.

12 **Q** All right.

13 **A** At least I don't think so. My -- my
14 interpretation of baseline in here is that it's the
15 sum of natural background contributions from
16 populated areas, for example.

11:42AM

17 **Q** What if those background levels are already
18 elevated from contribution from Cargill land-applied
19 poultry waste; you wouldn't know that, would you,
20 from what analysis you've taken?

11:43AM

21 MS. COLLINS: Object to form.

22 **A** Well, if you look at the drainages, typically
23 30 to 50 parts per billion seems to be a baseline
24 condition in most of these streams in the vicinity
25 of populated areas. So I would proffer that as some

11:43AM

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ANDY DAVIS, PhD, 4-7-09**116**

1 type of background, if you will.

2 Q Did you make any determination as to what the
3 background is for unimpacted soils that are similar
4 in nature to what you find in the Illinois River
5 watershed?

11:43AM

6 A Yeah. I looked at the concentrations in the
7 database. I don't recall specifically what those
8 numbers were, but I have them in some of the plots
9 I've shown in my report.

10 Q Did you make any determination yourself as to
11 the background levels for surface waters that are
12 unimpacted by poultry waste?

11:43AM

13 A Well, I looked at the distribution of surface
14 waters, and there is no way to really cull out a
15 particular concentration that's background, if you
16 will. It depends on what the potential sources
17 might look like, and what I said just now was the
18 aggregate seems to be about 30 to 50 parts per
19 billion from background conditions.

11:44AM

20 Q Did you make any determinations, sir, as to
21 the background for sediments, for unimpacted
22 sediments?

11:44AM

23 A Yes.

24 Q And what did you do to determine that?

25 A I looked at the sediment populations in the

11:44AM

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ANDY DAVIS, PhD, 4-7-09**117**

1 database and I looked -- I asked my statistician to
2 generate some histograms of those populations. It
3 turned out there's more than one. So when I saw
4 that, I instructed him to do the quintile-quintile
5 plot and see what the -- it was a very common 11:45AM
6 statistical analysis, and see what the cutoff might
7 look like that describes the baseline population
8 versus an impacted population.

9 Q Did you include in that analysis the reference
10 samples gathered by the State of Oklahoma from 11:45AM
11 unimpacted soils and sediments for water?

12 MS. COLLINS: Object to form.

13 A Well, I didn't use any soil data.

14 Q Okay.

15 A It was just sediment data. 11:45AM

16 Q Sediment data, all right. Did you include the
17 referenced sediment data collected by the State of
18 Oklahoma?

19 A I think there was two or three samples in
20 there, yes. 11:46AM

21 Q And you included them in your analysis then?

22 A As I recall, yes.

23 Q And why would you do that if you're trying to
24 find a background?

25 A Because they're part of the population. 11:46AM

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1 Q What if that population is not in the IRW,
2 that the reference was in fact taken outside the
3 watershed; would that make any difference?

4 **A** No, not at all.

5 Q Looking at Page 3 on your report, is that 11:46AM
6 chart described as a probability chart or is it a
7 frequency chart?

8 **A** Well, I call it a histogram.

9	Q	Okay. Is it charting probabilities or	
10		frequency?	11:46AM

11 **A** That one is probabilities, but that's the same
12 as frequency for all intents and purposes.

13 Q So you're showing frequencies of samples on
14 the Y axis; is that correct?

15 **A** That's correct, obviously corrected for the 11:47AM
16 actual number of total samples because you've got
17 probability.

18 Q Did you determine what the mean was in the
19 data shown in this Chart 3 -- I'm sorry, the chart
20 on Page 3 -- it's not Chart 3 -- Figure 1? 11:47AM

21 **A** Yes. The analysis here says 312 parts per
22 million.

23 Q Do you agree that that mean that's in the
24 lower population is actually elevated?

25 MS. COLLINS: Object to form. 11:47AM

ANDY DAVIS, PhD, 4-7-09**119**

1 **A** Elevated compared to what?

2 **Q** To what you're seeing here.

3 **A** That question didn't make any sense.

4 **Q** Okay, good. Do you agree that the mean of 312
5 milligrams per kilogram is elevated in relation to 11:48AM
6 the background samples?

7 MS. COLLINS: Object to form.

8 **A** No. This is the baseline population here. So
9 it's the accumulated contributions from whatever
10 would be considered in baseline. So this whole 11:48AM
11 population would be, quote, background. It's not
12 true background because this is a populated
13 watershed. True background might be one number, but
14 what we have to understand is what the baseline
15 looks like to determine whether or not there's 11:48AM
16 incremental impacts from other sources.

17 **Q** Okay. You list here an elevated population on
18 this chart, do you not?

19 **A** Yes.

20 **Q** And why do you depict the elevated population 11:49AM
21 is at 600 when you use 460 milligrams as your
22 screening criteria?

23 **A** Because 600 is more or less in this particular
24 rendition where the two populations cross over, and
25 so below 600 there would be some baseline 11:49AM

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ANDY DAVIS, PhD, 4-7-09**120**

1 participants and some which would represent the
2 elevated population, and so the 600 number is the
3 number you could use as a baseline upper limit, if
4 you like, in this analysis.

5 **Q** Let's get back on this because I think I'm a 11:49AM
6 little bit confused by why you used the term
7 baseline, and baseline in the terminology that I'm
8 used to seeing is it's the condition or conditions
9 that would have existed at the assessment area had
10 the discharge or release not occurred. Do you agree 11:50AM
11 with that definition?

12 **A** No. I think you're talking about -- when you
13 say release, you're talking about any release?

14 **Q** Yes. I'm talking about phosphorus in this
15 case. 11:50AM

16 **A** No. I'm talking about that's background.
17 That's a pristine pre-Columbian type of environments
18 where there's no population. That's what you're
19 talking about there as background.

20 **Q** Well, for environmental science when we're 11:50AM
21 establishing background, though, there is some
22 background that even though there is some
23 relationship to contributions post, pre-Columbia or
24 whatever it is you want to use as your time period,
25 there is some background that is used and could be 11:51AM

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ANDY DAVIS, PhD, 4-7-09**121**

1 used for the Illinois River watershed as essentially
2 an unimpacted level of sediments, is there not?

3 MS. COLLINS: Object to form.

4 **A** Not that I know. I don't know where it is.

5 **Q** Okay, and you've not --

6 **A** This is a populated area, so how can you have
7 a background? That's not possible here with the
8 data we've got.

9 **Q** And -- well, isn't it fairly common in a
10 scientific analysis to go out and find an area that
11 is generally unimpacted from the constituent of
12 concern in order to measure that against the level
13 of contamination that's seen at the assessment area?

11:51AM

14 MS. COLLINS: Object to form.

15 **A** It depends where you are. I mean, I've
16 certainly undertaken background studies in Nevada in
17 non-mineralized areas, for example, when I'm trying
18 to compare the effects of mineralization versus
19 non-mineralized areas. But here in this particular
20 setting, it's not reasonable to do because the whole
21 area has been impacted by human populations for
22 centuries. So that's why I've separated background
23 from baseline.

11:51AM

11:52AM

24 **Q** And isn't the numbers that you're using to
25 establish your baseline from sediments that have

11:52AM

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ANDY DAVIS, PhD, 4-7-09

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1 been impacted for decades from continuous poultry
2 waste application in the IRW?

3 MS. COLLINS: Object to form.

4 **A** It's been impacted by a wide variety of
5 contributions. 11:52AM

6 **Q** Just answer my question. Has it been impacted
7 by poultry waste over decades in the IRW?

8 MS. COLLINS: Object to form.

9 **Q** Yes or no?

10 **A** I don't know. I don't think you can tease 11:52AM
11 that out from this dataset. I -- what you can say
12 is there's a variety of different contributions to
13 the IRW, and that's what this representation shows
14 is discriminating between the baseline contribution
15 and the impacted population. That's what baseline 11:52AM
16 looks like.

17 **Q** But don't you agree with me, sir -- let's look
18 at the chart on the next page where you pick an
19 arbitrary number of a cross line of 460 milligrams
20 per kilogram, do you see that, and that's what 11:53AM
21 you've used as your screening tool; correct?

22 MS. COLLINS: Object to form.

23 **A** It's not arbitrary.

24 **Q** Isn't your screening tool at 460 milligrams
25 where you've crossed the lines on that chart? 11:53AM

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ANDY DAVIS, PhD, 4-7-09**123**

1 **A** That is the concentration where below that
2 concentration it is baseline population and above
3 that it's the impacted population.

4 **Q** All right. Is it your testimony, sir, under
5 oath that from the level of where you would cross a 11:53AM
6 line at 200 milligrams per kilogram, that from 200
7 to 460 none of that is impacted by phosphorus from
8 land-applied poultry waste?

9 MS. COLLINS: Object to form.

10 **A** I'm not quite sure what 200 has to do with 11:53AM
11 this but I can't --

12 **Q** It's a number I'm picking, sir.

13 **A** Okay. I can't tell what's impacted below 460.

14 **Q** All right.

15 **A** I think this is a wide variety, as we've 11:54AM
16 pointed out already, and had this discussion of
17 potential contributions to the watershed.

18 **Q** Do you agree with me, sir, that between 200
19 and 460 you can't tell but there is in fact some
20 contamination existing in some degree between the 11:54AM
21 200 level and the 460 level you've used for a
22 screening tool?

23 MS. COLLINS: Object to form.

24 **A** It's possible, but I don't know.

25 **Q** You make a statement in your report on Page 4 11:54AM

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ANDY DAVIS, PhD, 4-7-09**124**

1 that concentrations above 460 milligrams per
2 kilogram do not necessarily indicate a problem.
3 Tell me what is your basis of authority for that
4 statement.

5 **A** It's not a standard. It's simply saying 11:54AM
6 there -- it does not represent a risk assessment, if
7 you will, where I've done a risk assessment and said
8 a particular number is a potential concentration of
9 concern, but it's clearly where there is a shift in
10 the population, and you can see incredible 11:55AM
11 concentrations that don't form to the baseline
12 population.

13 **Q** What is the basis of authority for your
14 statement, concentrations above 460 milligrams per
15 kilogram do not necessarily indicate a problem? 11:55AM
16 MS. COLLINS: Object to form, asked and
17 answered.

18 **A** I just answered that.

19 **Q** Can you give me the authority on which you
20 rely? 11:55AM

21 **A** Yes. My analysis.

22 **Q** And that's it?

23 **A** I've been doing this type of thing for
24 decades, yes.

25 **Q** Okay. Do you agree or not agree that there is 11:55AM

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ANDY DAVIS, PhD, 4-7-09

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1 contamination in the samples below your 460
2 milligrams per kilogram that you've picked?

3 MS. COLLINS: Object to form.

4 **A** There is levels of phosphorus that have
5 contributed to the sediments from a variety of 11:56AM
6 different sources.

7 **Q** So your answer is, yes, there is?

8 MS. COLLINS: Object to form.

9 **A** I don't know if one would construe it as
10 contamination or not. 11:56AM

11 **Q** So, therefore, you are not making an opinion
12 in this case that below 460, it is or isn't
13 contaminated; is that what I'm hearing you say?

14 MS. COLLINS: Object to form.

15 **A** I'm not making a judgment about the risk 11:56AM
16 assessment perspective.

17 **Q** Okay, and is that also true then for any
18 levels above 460 milligrams per kilogram, that
19 you're not making a judgment there either?

20 MS. COLLINS: Object to form. 11:56AM

21 **A** That's correct. I'm just saying you don't
22 know if there's an impact from a risk assessment
23 perspective or not.

24 **Q** Do you know where control samples were taken
25 by the State of Oklahoma? 11:56AM

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1 **A** I think they were taken off, as I recall,
2 somewhere to the northwest of the IRW.

3 **Q** Is it your opinion that there's only been one
4 location for control samples taken?

5 **A** I think there was two or three, but I'd have 11:57AM
6 to go back to the database and confirm that.

7 **Q** Do you have any scientific data in which to
8 dispute the correctness of the choice of the
9 sediments as control samples used by the State?

10 **A** I don't have any knowledge to either 11:57AM
11 corroborate nor to disavow the locations.

12 **Q** Do you have any scientific data which dispute
13 the accuracy of the sediments control samples used
14 by the State?

15 **A** Do you mean the concentrations? 11:57AM

16 **Q** That would be part of the accuracy, yes, sir.
17 That's how they're measured, aren't they?

18 MS. COLLINS: Object to form.

19 **Q** Aren't they measured in concentration?

20 **A** Well, your question was vague. I was trying 11:58AM
21 to confirm actually what you were talking about.

22 **Q** Are they measured in any other way than
23 concentration in the database that you've looked at?

24 MS. COLLINS: Object to form.

25 **A** Not in the database I've looked at. 11:58AM

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ANDY DAVIS, PhD, 4-7-09**128**

1 question to you is, do you have any scientific data
2 that would dispute the accuracy of the samples taken
3 and used by the State for their background?

4 **A** Not at a specific time, no.

5 **Q** Do you agree that there can be degrees or 11:59AM
6 levels of contamination found in the IRW?

7 MS. COLLINS: Object to form.

8 **A** Well, I think that's true -- well, when you
9 say contamination, there's different concentrations
10 of phosphorus in different locations. So if that's 11:59AM
11 what you mean, yes.

12 **Q** And would you agree then that in that
13 instance, higher levels of phosphorus would indicate
14 greater impact from phosphorus or not?

15 MS. COLLINS: Object to form. 11:59AM

16 **A** Yes. If it's higher phosphorus
17 concentrations, then there is a higher phosphorus
18 concentration.

19 **Q** Since looking at your chart, Figure 2 on Page
20 4, you can't determine whether there is 12:00PM
21 contamination above or below your 460 line. Do you
22 agree that there is not necessarily a single line
23 that when it's crossed, you can conclude
24 contamination exists for poultry phosphorus?

25 MS. COLLINS: Object to form, misstates 12:00PM

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1 testimony.

2 **A** Well, there's two populations here. There's
3 an impacted population and a baseline population.
4 I'm not sure how else to --

5 **Q** Then is it your -- is it your testimony that 12:00PM
6 the only impacted population is that which is above
7 460 milligrams per kilogram?

8 **A** Yes. The rest is baseline, but it's been
9 impacted. The baseline population has been impacted
10 by all those other contributions that we talked 12:01PM
11 about earlier.

12 **Q** And that analysis -- your decision that you
13 just told me is based upon what you've constructed
14 or somebody for you on the chart Figure 2 at Page 4;
15 correct? 12:01PM

16 **A** That's correct.

17 **Q** Okay. Is it possible that samples above 300
18 on your Figure 2 up to 460 have some phosphorus
19 contamination in them?

20 MS. COLLINS: Object to form. 12:01PM

21 **A** Well, yes, because this is a phosphorus
22 concentration plot.

23 **Q** Did you do anything to determine a
24 representative background sample for either soil,
25 water or sediments in the IRW? 12:02PM

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ANDY DAVIS, PhD, 4-7-09**130**

1 **A** Yes. I did this analysis for the sediment to
2 evaluate what my opinion of baseline is because I
3 don't believe you can determine background the way
4 you've described it.

5 **Q** Let's take a break and let him change the tape 12:02PM
6 and we'll come right back, if you would, please?

7 VIDEOGRAPHER: We're now off the Record.
8 The time is 12:03 p.m.

9 (Following a lunch recess at 12:03
10 p.m., proceedings continued on the Record at 1:09
11 p.m.)

12 VIDEOGRAPHER: We are now back on the
13 Record. The time is 1:09 p.m.

14 **Q** All right. Dr. Davis, you said earlier that
15 the baseline in your chart there is impacted. Does 01:09PM
16 that include being impacted from land-applied
17 poultry waste or any other -- just let's stop there.
18 Does that included impacted from land-applied
19 poultry waste?

20 MR. BURNS: Object to form. 01:09PM

21 **A** It includes anything that's identified on Page
22 4.

23 **Q** Okay. Which includes land-applied poultry
24 waste; correct?

25 **A** And you can't separate out what those 01:09PM

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ANDY DAVIS, PhD, 4-7-09**131**

1 contributions look like and you don't know if a
2 particular --

3 **Q** Well, you haven't done that, let's put it that
4 way; correct?

5 **A** That's correct. 01:09PM

6 **Q** All right. Now, so that I can understand on
7 your baseline calculation here, if you -- or as more
8 phosphorus is added to the watershed from where
9 you've measured it and created your chart, Figure 2,
10 does your screening tool level change also? 01:10PM

11 MS. COLLINS: Object to form.

12 **A** I don't understand the question. It's based
13 purely on just the data of the population that was
14 available for this particular analysis.

15 **Q** All right, and I understand that you've 01:10PM
16 limited it to just that, but in theory, if the data
17 that is used has a continued period of time where
18 phosphorus is continually added to the watershed,
19 will that cause the level of your screening tool
20 that you've chosen here to also change? 01:10PM

21 MS. COLLINS: Object to form.

22 **A** Well, this is a snapshot in time using the
23 data that's available. So I don't know what might
24 happen in the future, and I don't know what the
25 condition was in the past. 01:10PM

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ANDY DAVIS, PhD, 4-7-09**132**

1 **Q** And so if the conditions in the past were less
2 concentration of phosphorus, would you agree that
3 your screening tool of 460 milligrams per kilogram
4 would likely go down also?

5 MS. COLLINS: Object to form. 01:11PM

6 **A** This approach here is only specific to this
7 particular point in time with this particular
8 dataset.

9 **Q** Okay. Let me hand you what I've marked as
10 Exhibit 14, and this is from your spreadsheet Davis 01:11PM
11 00739-P total Sed depth. I've put that down in the
12 lower right-hand corner of this particular exhibit,
13 but I've sorted it by location. Did you look at the
14 descriptions for identifying the samples as they are
15 listed in this dataset? 01:12PM

16 **A** For this particular analysis here?

17 **Q** Did you look -- at your dataset, did you look
18 at what these descriptions are on Exhibit 14 as set
19 out in the CDM materials?

20 **A** For this one I just used the entire dataset as 01:12PM
21 it's portrayed here.

22 **Q** And I understand that, but my question is, did
23 you look at the descriptions to identify what they
24 stand for under the column location in the dataset
25 when you did this work? 01:12PM

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ANDY DAVIS, PhD, 4-7-09**133**

1 **A** No, not when I did this work.

2 **Q** Okay. Looking at the Exhibit 14 and the
3 description at the very top under location, do you
4 see the BBL and what looks like five samples there
5 with descriptor BBL?

01:12PM

6 **A** Yes.

7 **Q** And you don't know where that location is, do
8 you?

9 **A** Well, not without going to the database, no.

10 **Q** And what you just told me is that you didn't
11 do that in preparation of your work in this case;
12 correct?

01:13PM

13 **A** For this particular report, that's right.

14 **Q** All right. Did you do it for any other report
15 besides the one that you just pointed to as Exhibit
16 1?

01:13PM

17 **A** Yes.

18 **Q** And what did you do it for?

19 **A** Well, I've subsequently gone back and looked
20 in the dataset and noticed there was some data that
21 you could take out or you can leave in depending on
22 your particular preference.

01:13PM

23 **Q** And all of that resulted in your errata that
24 we received yesterday afternoon; correct?

25 **A** Not completely.

01:13PM

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ANDY DAVIS, PhD, 4-7-09

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1 **Q** All right. There are more changes then do you
2 expect to make in your report?

3 **A** There's one specific to this particular issue
4 that I think sheds some more light on the
5 distribution of the data, yes.

01:13PM

6 **Q** And have you put it in your errata already?

7 **A** No.

8 **Q** And are you intending to have another
9 submission or a change in your report?

10 **A** Could I have those sheets, please? Thank you.

01:13PM

11 This data is the same as here, but I sensed it to
12 remove what I noticed over the weekend included some
13 duplicates that seem to be the same number and also
14 some lake samples. So as you can see, once you take
15 out the duplicates and the lake samples, the
16 concentration of the baseline versus impacted
17 actually goes up to about 418 milligrams per
18 kilogram. So quite similar to the previous list.

01:14PM

19 **Q** All right. Let's get back to my Exhibit 14
20 then, and I'll come back to this?

01:14PM

21 **A** Okay.

22 **Q** But I want to complete my questioning on
23 Exhibit 14. Do you know where BBL location is?

24 **A** Not as I sit here today, no.

25 **Q** Okay. Do you know whether it's even in the

01:15PM

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ANDY DAVIS, PhD, 4-7-09**135**

1 IRW?

2 **A** That could be the background samples, but I
3 don't know.

4 **Q** Okay. There's another partway down that says
5 BS-REF. Do you know where that location was? 01:15PM

6 **A** Not specifically, no.

7 **Q** Do you know whether it was in the IRW?

8 **A** Not without going back to the database.

9 **Q** All right. Did you know it at the time you
10 prepared your chart on Page 4? 01:15PM

11 **A** No.

12 **Q** Would you look at the last page of Exhibit 14,
13 please, and there's -- under location column the
14 very -- near the last SLK 1 through 4. Do you see
15 that one? 01:15PM

16 **A** I see those, yes.

17 **Q** And do you know where that location was?

18 **A** No.

19 **Q** And did you know it at the time you prepared
20 your report? 01:15PM

21 **A** No, but I would like to point out, it would
22 have absolutely no impact whether those samples are
23 included or excluded on the analysis.

24 **Q** And why is that?

25 **A** Because if you look, you can see they fall 01:16PM

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ANDY DAVIS, PhD, 4-7-09**136**

1 within the range of 180 or thereabouts. Those are
2 varied in this last set. In the first set they're
3 between 220 and 300, and so it would have
4 essentially the effect of removing a few of these
5 data points, and when one removes a number of these
6 data points, there's no significant change in the
7 outcome of the analysis.

01:16PM

8 **Q** And the analysis you're referring to is the
9 calculation made in Figure 2 or your opinions?

10 **A** To both.

01:16PM

11 **Q** Okay. So even if those -- even that data was
12 outside the IRW, having it in has no impact in your
13 opinion?

14 **A** That's correct.

15 **Q** So if I'm to understand, for purposes of your
16 analysis, you could include samples from all over
17 the United States and it wouldn't matter to your
18 opinion, would it?

01:16PM

19 MS. COLLINS: Object to form.

20 **A** Well, it depends on the concentrations. I
21 mean, it depends on how it would influence the
22 population. This is, for the most part, an IRW
23 population, but what you're pointing to is perhaps a
24 dozen or so samples, and in the context of total of
25 317, it's just the pimple on the elephant's back.

01:17PM

01:17PM

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ANDY DAVIS, PhD, 4-7-09**137**

1 So it doesn't influence the distribution of the
2 population, no.

3 Q Tell the court why you would not use some
4 reference or control site such as was sampled by the
5 State of Oklahoma for your analysis to determine 01:18PM
6 impact within the IRW.

7 MS. COLLINS: Object to form.

8 A Well, it is incorporated in the first
9 analysis, the reference -- by reference. I mean,
10 it's -- part of the problem is you don't know if the 01:18PM
11 samples that were selected by CDM to represent their
12 reference samples had the same type of impact within
13 the IRW. So there's no way of knowing if it's
14 apples and apples or apples and oranges. That's why
15 I went to this distribution approach for the IRW 01:18PM
16 samples.

17 Q But that's just a generalization when you
18 would use a distribution approach, isn't it?

19 A No, because it captures all the impacts within
20 the IRW. 01:19PM

21 Q But it generalizes them into what would you
22 have described as a bimodal distribution; correct?

23 A Well, that's how the data falls out. It's not
24 a question of generalizing. It's just a question of
25 that is the dataset. 01:19PM

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ANDY DAVIS, PhD, 4-7-09

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1 **Q** In Exhibit 14 the lake core sediments are
2 included in that dataset; is that correct?

3 **A** That is correct.

4 **Q** Can you tell me why you would use the lake
5 core sediments that date back as early as 1950s? 01:19PM

6 **A** Because of that juncture, I was using the
7 entire dataset. In this revised presentation here
8 you'll see I've excluded the lake core dataset.

9 **Q** Okay. Why did you include it in your report
10 originally is my question? 01:20PM

11 **A** Because it was part of the sediment data in
12 the sediment database that the State provided, and I
13 decided over the weekend when I went back and looked
14 at that, it would be a good idea to see what the
15 impact of what those lake core sediments were on the 01:20PM
16 population distribution, and as you can see, when I
17 exclude them, the concentration changes a little bit
18 and it goes up by 20 PPM.

19 **Q** What adjustment did you make for the lake core
20 sediments for the water percentages in the sediment 01:20PM
21 cores?

22 MS. COLLINS: Object to form.

23 **A** I don't understand the question.

24 **Q** Let me ask you this: Did you use wet weight
25 samples for purposes of your analysis? 01:20PM

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ANDY DAVIS, PhD, 4-7-09**139**

1 **A** I used the data that was provided as total
2 phosphorus in the State database.

3 **Q** And do you know whether or not that's wet
4 weight sampling or is that a dry weight?

5 **A** Normally it's dry weight, the way it should be 01:21PM
6 reported across the board. They should have been --
7 they should have had uniform types of analysis for
8 sediments.

9 **Q** And understanding that, did you in fact
10 inspect the database to see whether or not wet and 01:21PM
11 dry were both reported?

12 **A** Well, they may have both been reported, but I
13 used the total as described by the State for total
14 phosphorus.

15 **Q** And do you know whether or not that's based on 01:21PM
16 a wet basis or a dry basis?

17 **A** I presume it's a dry basis, but I don't know.
18 That's how a scientist would normally describe it.

19 **Q** As a dry basis?

20 **A** Yes. 01:21PM

21 **Q** But you don't know how it was described by the
22 CDM for purposes of that database, do you?

23 **A** Well, not as I sit here without going back to
24 the database, no.

25 **Q** Well, did you make that determination before 01:21PM

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ANDY DAVIS, PhD, 4-7-09**140**

1 you used the numbers?

2 **A** No. I assumed they would use total phosphorus
3 on a dry weight basis, which is what a reputable
4 scientist would do if you are doing a database and
5 you're comparing different sediment samples. 01:22PM

6 **Q** So based on that assumption, you assumed that
7 the lake core sediments were also shown as dry
8 weight basis?

9 **A** That's correct. In the grand scheme of
10 things, it's irrelevant because when you remove the 01:22PM
11 lake core sediments, as you can see, the population
12 dynamics stayed virtually similar.

13 **Q** Well --

14 **A** The same.

15 **Q** -- Dr. Davis, that material is not in your 01:22PM
16 report. It's not in your considered materials, and
17 I don't consider it to be timely for purposes of
18 your opinions in this case. So I'm not giving any
19 weight to what you've done yesterday or this
20 weekend. 01:22PM

21 So for purposes of this deposition, I'd like
22 for you to continue to refer to that material that
23 you've already applied -- I mean, provided to the
24 State and that which you used to form the opinions
25 that's in your written report. Is that acceptable 01:22PM

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ANDY DAVIS, PhD, 4-7-09**141**

1 to you from now on?

2 MS. COLLINS: You're asking him what his
3 opinions are and the bases for those opinions, and
4 he's given you his understanding. Now, if you want
5 to limit --

01:23PM

6 MR. GARREN: No. He volunteered
7 information that was not part of my questions when
8 he said he's done some other analysis and brought
9 that forward. I asked him what he did for purposes
10 of this case and that's been the limit of my
11 questions, and I'm not intending, nor am I waiving
12 any rights because he's brought that into this
13 deposition, that we are going to allow that
14 testimony or that evidence to come into trial at
15 this late stage when it's not part of his report
16 that was due in January. That is my point.

01:23PM

01:23PM

17 Q So I don't want to confuse the Record, Dr.
18 Davis, but what I'm just asking you to do is to
19 refer to those materials that are in your January
20 report or your errata and not anything else so that
21 the Record is clear. Can you do that?

01:23PM

22 A Well, no. It's part of any analysis. So I
23 mean, I'm going to refer to what I want to refer to,
24 and then it's up to you to deal with the legal
25 niceties of how you see fit.

01:24PM

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ANDY DAVIS, PhD, 4-7-09**142**

1 Q I'm telling you right now that's not the way
2 it's going to go because I'm telling you, my
3 questions are deemed to be on your analysis as
4 written in your report and provided to the State as
5 it was required to do under the scheduling order,
6 and for you to interject some new analysis now is
7 unacceptable. I don't want the Record to be
8 mistaken. I want it to be clear that what you're
9 talking about in this report and your testimony is
10 only about your report and not some subsequent
11 analysis done after the fact. All right?

01:24PM

01:24PM

12 MS. COLLINS: If you would like to make a
13 representation so that you're limiting your
14 questions from here forward to a specific written
15 report and you don't want to inquire into what his
16 actual opinions are, then we can certainly go with
17 that caveat going forward, but to admonish him for
18 giving you responses that are beyond that because
19 you haven't tailored your questions in that way is
20 inappropriate.

01:24PM

01:24PM

21 MR. GARREN: Well, we can argue about
22 whether my questions are tailored properly or not.

23 Q The point I'm trying to make is going forward,
24 I want your analysis and your information and
25 opinions that support your report or the errata that

01:25PM

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918-587-2878**

ANDY DAVIS, PhD, 4-7-09**143**

1 you've provided to the State prior to this

2 deposition, okay, and if I want anything different,

3 I'll make it clear but going forward, that's my

4 intent.

5 MS. COLLINS: Well, then you need to limit

01:25PM

6 your questions.

7 MR. GARREN: You can argue about the form

8 by making your objection then.

9 MS. COLLINS: Well, but, no. I'm going to

10 direct him to give his best answers based on his

01:25PM

11 knowledge and his expertise thus far and not carve

12 out some piece of information that you say you don't

13 want. So you can be -- you can tailor your

14 questions and you can ask him what the basis is.

15 MR. GARREN: His opinions are only those

01:25PM

16 that are expressed in the report. He is not

17 entitled at this stage to change his opinion, give

18 new data that is three or four months past the date

19 that this information was due under the scheduling

20 order, that you, the defendants, have made it quite

01:26PM

21 clear that you want the plaintiff's experts to do

22 their shot in time and be hand bound not to explore,

23 not to review, not to do any additional analysis

24 from that point forward. If that's what the

25 defendants want, I would like for this deposition,

01:26PM

**TULSA FREELANCE REPORTERS
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ANDY DAVIS, PhD, 4-7-09**144**

1 Dr. Davis to limit his opinions, his questions to
2 the report and analysis that has been provided under
3 the January letter and the errata given to us late
4 yesterday afternoon. That's all I'm asking because
5 we're not going to waive and allow other information
6 to come in that the State hasn't had a chance to
7 review.

01:26PM

8 MS. COLLINS: The objection is noted. The
9 only reason this came out is because of the question
10 you asked him.

01:27PM

11 Q Okay. Is it your opinion, sir, that the 1950s
12 and '60s sediments you incorporated into the
13 database were fair to use in establishing your
14 screening tool in this case?

15 A Well, they can be, but that's why I did the
16 subsequent analysis, to see what the impact of
17 having them in the data would look like.

01:27PM

18 Q What did you do to confirm whether or not the
19 lake sediments, water content was calculated and
20 actually reduced to a dry weight equivalence?

01:27PM

21 MS. COLLINS: Object to form.

22 A I think I've answered that line of
23 questioning. I didn't do anything specifically. I
24 just assumed that from a professional basis, it
25 would be on a dry weight comparison in the database.

01:28PM

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ANDY DAVIS, PhD, 4-7-09

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1 **Q** Well, if both were reported, wouldn't it be
2 professional on your part to have used the dry
3 weight yourself?

4 MS. COLLINS: Object to form.

5 **A** That's my understanding of what we had. 01:28PM

6 **Q** Okay. You do understand that both were
7 reported, do you not, in the dataset, wet and dry
8 weight?

9 **A** I didn't go back and do an exhaustive
10 examination of that, no. 01:28PM

11 **Q** I hand you what's Exhibit 15. It's the same
12 dataset that's Exhibit 14 sorted in this case by
13 results. With regard to lake sediment samples, do
14 you, sir, know or have an opinion whether or not the
15 sediments at the higher level, meaning closer to the 01:29PM
16 top, would have different water concentrations than
17 those at the lower level, that is, closer to the
18 soil?

19 MS. COLLINS: Object to form.

20 **A** Well, this is all the data I have, so I just 01:29PM
21 used this data. I don't know -- I'm assuming the
22 moisture contents would have been standardized and
23 there would be a dry weight basis.

24 **Q** You would agree that your original report and
25 opinion is based upon a dataset that does include 01:30PM

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ANDY DAVIS, PhD, 4-7-09**146**

1 duplicates, does it not?

2 **A** It did, and that's why I did that analysis,
3 was to remove the duplicates in the database. I
4 just used the State database, and I noticed this
5 anomaly and that's why I did the reanalysis. 01:30PM

6 **Q** Why did it take you four months after your
7 report to notice that anomaly when you had that data
8 for months in advance of doing your report
9 initially?

10 MS. COLLINS: Object to form, 01:30PM
11 misrepresentation.

12 **A** Because I just happened to see it plotted out
13 that particular way when I was reviewing my
14 considered by data as well.

15 **Q** Did you look at the column descriptive 01:30PM
16 headings in the State's database before you used the
17 data that you did use?

18 MS. COLLINS: Object to form, asked and
19 answered.

20 **A** Well, we downloaded the data from a website. 01:30PM
21 So I didn't go back in and look at the specific data
22 in the raw form, no.

23 **Q** So who -- so what website did you download it
24 from?

25 **A** It was a website that Miss Collins offers, so 01:31PM

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ANDY DAVIS, PhD, 4-7-09**147**

1 I'm not sure on the specifics of that.

2 **Q** Do you know whether or not you in fact got all
3 of the State data from that website when you
4 downloaded?

5 **A** Best of my knowledge, yes. 01:31PM

6 **Q** How do you know?

7 **A** Well, we went back and tried to pull all the
8 information out that had to do with phosphorus in
9 the Illinois River watershed.

10 **Q** And in doing that, did you notice the column 01:31PM
11 headings, the descriptive column headings as to
12 whether or not it was wet, dry or some other
13 designation?

14 **A** Not at that particular point in time, no.

15 **Q** And when did you first notice that? 01:31PM

16 **A** Well, I haven't seen wet or dry. I'm telling
17 you I think this is all dry base is my
18 understanding.

19 **Q** All right. Would you agree with me that if it
20 is a wet base that you use, that sediments 01:31PM
21 throughout the watershed are going to have a large
22 variability of percent water within the samples?

23 MS. COLLINS: Object to form.

24 **A** I think that's impossible to determine, but
25 the bottom line is that we have a decent 01:32PM

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ANDY DAVIS, PhD, 4-7-09

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1 distribution in terms of the different populations,
2 and my sense is, based on the statistics, if you
3 include lake sediments or don't include lake
4 sediments, you'd have a pretty similar answer, but
5 I'm assuming that the river sediments would have
6 been treated in the same way based on my review of
7 Dr. Olsen's standard operating procedures.

01:32PM

8 Q Are you telling me, sir, that if you have a
9 column of wet samples listed in a database, that
10 looking at a column of solids of those same samples,
11 it would be impossible to determine if there's some
12 variability in the moisture content within the
13 samples?

01:32PM

14 MS. COLLINS: Object to form.

15 A Yeah. I don't know how you would do that
16 without having a moisture content identified along
17 with the sample.

01:32PM

18 Q Let me hand you what's been marked Exhibit 2.

19 A Are we done with these?

20 Q For now. Just lay them there in front of you.

01:33PM

21 We may or may not get back to them. Do you
22 recognize this document, sir?

23 A Yes.

24 Q Can you tell the court what it is?

25 A It's a description of total phosphorus. I

01:33PM

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ANDY DAVIS, PhD, 4-7-09**149**

1 think it comes from Engel's report actually by
2 source over time.

3 Q So you didn't prepare this yourself?

4 A Well, I did. I used the data or the figure
5 from Mr. Engel. 01:34PM

6 Q Did you do anything to verify the accuracy of
7 the data that you used?

8 A No.

9 Q Do you believe it to be accurate?

10 A I've seen some dissension about numbers of 01:34PM
11 chickens, so I simply just made a record of data. I
12 don't know if it's accurate or not.

13 Q Okay. Did you use or rely on this Exhibit 2
14 for purposes of forming any of your opinions?

15 A No. 01:34PM

16 Q Can you tell me what is the animal unit used
17 for beef cattle and heifers calved in this
18 particular set?

19 A No.

20 Q Okay. Can you tell me what it is for chickens 01:35PM
21 or turkeys?

22 A I assume it's just the number. If you ask me
23 the number of animals, I suppose it's true for all
24 of them, times -- you have for multiply that by, I
25 think, 2,000. So the top scale would then become 01:35PM

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ANDY DAVIS, PhD, 4-7-09

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1 3.2 million.

2 **Q** Okay.

3 **A** I assume the same is true for all the rest of
4 the organisms.

5 **Q** Would you agree, though, that what this 01:35PM
6 depicts is that these animal categories are listed
7 on an equivalent animal unit basis?

8 **A** I think that was the case or the objective,
9 yes.

10 **Q** Okay, and based upon looking at this, would 01:35PM
11 you agree with me that chickens are by far the
12 largest phosphorus contributor based on animal
13 units?

14 MS. COLLINS: Object to form.

15 **A** Based on this depiction but, again, I can't 01:36PM
16 speak to its accuracy. I didn't go back and check
17 it.

18 **Q** Do you agree that in looking at this Exhibit 2
19 from the data that is presented, there is a clear
20 acceleration of phosphorus contribution from 01:36PM
21 chickens from about 1955 to the end of the line
22 shown for chickens?

23 MR. BURNS: Object to form.

24 **A** Based on this interpretation, it looks like a
25 linear increase if this data is correct. 01:36PM

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ANDY DAVIS, PhD, 4-7-09

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1 **Q** You have no information or data to suggest
2 that it's not correct, do you?

3 **A** Well --

4 MS. COLLINS: Object to form.

5 **A** -- I've got no information to know if it's 01:37PM
6 correct or incorrect.

7 **Q** Does it appear to you that since about 1985 on
8 this chart turkeys have contributed a greater number
9 of phosphorus by animal units than either category
10 of cattle? 01:37PM

11 **A** Well, if this is correct, certainly on an
12 individual basis, if you combine the cattle and the
13 beef cows, then there would be less if these numbers
14 are correct.

15 **Q** When you prepared your report and you 01:37PM
16 identified your screening tool, did you round it up
17 for purposes of your screening tool?

18 MS. COLLINS: Object to form.

19 **A** Not that I recall. I think -- you say the
20 460, is that what you mean, that number? 01:38PM

21 **Q** Yes. Isn't that what you referred to as your
22 screening tool?

23 **A** Yeah. That was the intersection between the
24 lines.

25 **Q** For purposes of your report and analysis and 01:38PM

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ANDY DAVIS, PhD, 4-7-09**152**

1 the rest of your report, did you round it or did you
2 continue to use it at 460?

3 MS. COLLINS: Object to form.

4 **A** I don't understand the question.

5 **Q** Okay. We'll come back to it when we hit it. 01:38PM

6 You indicated that you always use average when there
7 were multiple samples. Did you round the numbers
8 from the State's data samples?

9 MS. COLLINS: Object to form.

10 **A** Are you talking about surface waters? 01:39PM

11 **Q** I'm talking about anything, sediments or
12 waters. Did you round numbers off for purposes of
13 your report?

14 **A** Oh, oh, oh. I understand what you're saying
15 now. Yes. So if it was three figures, I rounded it 01:39PM
16 to two significant figures, for example.

17 **Q** And did you round up or down when you rounded?

18 **A** I think it depends on the number. I tried to
19 follow protocols. I may have missed one or two, but
20 there isn't a significant change in the description 01:39PM
21 of concentrations.

22 **Q** Did you use the USGS sampling data that was
23 contained in the State's sampling results?

24 **A** I used whatever was in the State database.

25 **Q** My question is, do you know whether or not 01:40PM

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ANDY DAVIS, PhD, 4-7-09

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1 USGS data was in the State's database that you also
2 used?

3 **A** No, I don't.

4 **Q** Did you include spring sampling data in your
5 work?

01:40PM

6 **A** I would have included I believe anything that
7 was adjacent to the Cargill facilities. Now, spring
8 data, there may have been one location where there
9 was spring data, I didn't include it, but I included
10 everything else.

01:40PM

11 **Q** Did you include groundwater sampling data in
12 your work?

13 **A** Yes.

14 **Q** Let's look again at your report at Site OK-1.
15 You've now corrected that site, have you not, to
16 name a different owner? You had P. Fisher on there
17 originally.

01:40PM

18 **A** Yes, that's correct.

19 **Q** Do you know where you got the name P. Fisher?

20 **A** No.

01:41PM

21 **Q** Were you responsible in identifying the names
22 of these sites or was someone else for you doing
23 that?

24 **A** No. I got that from counsel.

25 **Q** The site that you show as OK-01, is that site

01:41PM

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ANDY DAVIS, PhD, 4-7-09**154**

1 within the boundaries of the Illinois River
2 watershed?

3 **A** Yes.

4 **Q** On your aerial, what is the -- I'm going to
5 point to it. What is the yellowish line running 01:41PM
6 through your aerial on that Page 8 of your report?

7 **A** Actually I think that could be the edge of the
8 IRW because I recall that OK-01 has got some houses
9 outside the boundary and one inside the watershed.

10 **Q** So what site were you relying on for purposes 01:42PM
11 of your analysis; is it the OK-1, which is outside
12 the IRW?

13 **A** No, because it's on the ridge line, and OK-01
14 has five houses or so to the northwest and one house
15 that's pretty much on the ridge line, which would 01:43PM
16 drain potentially into the Illinois River. That's
17 why I looked at that site.

18 **Q** And how do you say potentially it will drain
19 into the Illinois River?

20 **A** Well, because it's upgradient of the Illinois 01:43PM
21 River, so it's higher than the Illinois River, and
22 so that's why you have to go look at the location
23 and understand if there's the potential for the
24 source receptor pathway to be complete.

25 **Q** Okay, and did you do that? 01:43PM

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ANDY DAVIS, PhD, 4-7-09**155**

1 **A** Yes.

2 **Q** And did you determine whether it had the
3 potential of flow to the Illinois River, that is,
4 OK-01 or did it actually flow to another drainage
5 area, not the Illinois River basin?

01:43PM

6 **A** Well, as I said, part -- part of the property
7 and part of the houses are in the other watershed
8 boundary, and then one of them is in the potential
9 catchment area for the IRW.

10 **Q** The way I understand your report, what you
11 have cited as OK-1 by lat-long is in fact a point
12 outside the Illinois River watershed. Did you do
13 your analysis for the four houses outside the
14 watershed or for the single house inside the
15 watershed?

01:44PM

01:44PM

16 **A** For the house inside the watershed, and
17 perhaps I could clarify this. Do you have those
18 photographs by any chance, the hard copy?

19 MS. COLLINS: These are the Bates numbered
20 photographs. I've had them printed. Do you want a
21 set?

01:44PM

22 MR. GARREN: That would be fine if he's
23 going to refer to them.

24 **A** There's two pictures, 798 and 799, and so what
25 I did was to walk over to this house, houses, house,

01:47PM

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ANDY DAVIS, PhD, 4-7-09**156**

1 sorry, and I located some damp spots, which were
2 where the green grass is shown in 798, and there's
3 no evidence of runoff. In fact, there appeared to
4 be almost a basin in that area. So I determined the
5 chances of any runoff from litter that had been
6 applied in this field would not occur.

01:47PM

7 **Q** That isn't my question. My question was, is
8 OK-1 a site within the IRW or outside the IRW in
9 your opinion?

10 **A** In my opinion that one house has the potential
11 to drain into the IRW, and that's why we list it.

01:47PM

12 **Q** Okay, and so the pictures 798 and 799 that
13 you've alluded to is a picture of the single house
14 that you say is in the watershed; correct?

15 **A** Or could be, yes.

01:48PM

16 **Q** Or could be, okay. Did you use the
17 groundwater from wells' data in the CDM database?

18 MS. COLLINS: Object to form.

19 **A** Yes, where I had groundwater data included as
20 not OK-01.

01:48PM

21 **Q** In your report generally do you use the
22 groundwater samples from wells?

23 **A** Yes, if they're adjacent to sites.

24 MS. COLLINS: Are you talking about water
25 wells?

01:48PM

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ANDY DAVIS, PhD, 4-7-09

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1 MR. GARREN: Pardon me?

2 MS. COLLINS: Well, water wells?

3 MR. GARREN: Yeah.

4 Q We talked about springs. We talked about --

5 MS. COLLINS: As opposed to the person 01:48PM
6 Wells, Dr. Wells.

7 A I used the groundwater data that was provided.

8 Q Okay. Did you use any soil data in the CDM
9 database for purposes of your analysis?

10 A Yes. I've shown the soil data where it's in 01:49PM
11 the shot here.

12 Q Are you saying soil samples or are you
13 referring only to sediments?

14 A No. I consider soils to be dry land samples,
15 and sediment to be in water samples, so I used both. 01:49PM

16 Q Okay. What did you do to determine if there
17 were any best management practices in place at any
18 of the Cargill sites?

19 MS. COLLINS: Object to form.

20 A I didn't assess that. 01:49PM

21 Q Did you assess whether or not there are any
22 BMPs business -- or best management practice in
23 place at any of the land application sites for
24 poultry waste?

25 MS. COLLINS: Object to form. 01:50PM

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ANDY DAVIS, PhD, 4-7-09

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A No. I restricted my analysis to the 34 Cargill houses.

Q Would you agree with me that in identifying environmental sources of contamination, it is uncommon to have information concerning all sources?

01:50PM

MS. COLLINS: Object to the form.

A Depends on the investigation, depends on the objectives of the investigation.

Q But isn't it uncommon generally to have all sources of information in an environmental examination for contamination?

01:50PM

MS. COLLINS: Object to form.

A No .

Q Okay.

A Could you ask that question again? I may not have understood it correctly.

01:51PM

Q Would you agree that in identifying environmental sources of contamination, it is uncommon to have information concerning all sources?

MS. COLLINS: Same objection.

01:51PM

A No. I think that oftentimes all sources are understood.

Q Okay. Do you agree that in environmental forensics investigations you really have a priority knowledge of all sources?

01:51PM

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1 MS. COLLINS: Object to form.

2 **A** Depends on the investigation I suppose.

3 **Q** Would you agree that it's typically -- what is
4 typically done is to collect a lot of samples and
5 not necessarily have one from all sources in an
6 environmental contamination case?

01:52PM

7 MS. COLLINS: Object to form.

8 **A** Absolutely not. I mean, that's one of the key
9 goals is to understand the relationship between the
10 potential sources and the receptor. That's why
11 people go to great lengths to identify what those
12 pathways look like and to compare source receptor
13 relationships.

01:52PM

14 **Q** Okay. Do you agree that if samples show
15 contamination sufficient to impact the waters or
16 have detectable concentrations, the pattern of those
17 sources will be identified?

01:52PM

18 MS. COLLINS: Object to form.

19 **A** I'm not sure exactly what you're talking
20 about, but I think no is the answer.

01:52PM

21 **Q** Are you familiar with a book entitled
22 Introduction to Environmental Forensics, Second
23 Edition, edited by Brian Murphy and Robert Morrison?

24 **A** I've heard of it but I'm not familiar with it.

25 **Q** Have you read it?

01:53PM

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ANDY DAVIS, PhD, 4-7-09

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1 **A** No.

2 **Q** Do you know whether or not it's an authority
3 and scientifically accepted as authority in the
4 field of forensic environmental investigation?

5 **A** No. 01:53PM

6 **Q** You don't believe it is?

7 **A** I don't know.

8 **Q** You don't know, okay. Do you know how many
9 samples were collected by the State in this case?

10 **A** Of what? 01:53PM

11 **Q** Samples, water, soil, sediment. How many
12 samples were collected in the water to determine
13 those pathways to those receptors that you talked
14 about was necessary or needed?

15 **A** Well, I'd say probably about 200 soil samples 01:53PM
16 and 300 sediments and perhaps -- and I'm sort of
17 being generic here just based on number of analytes
18 and number of records for different constituents --
19 perhaps a couple hundred groundwater samples. It's
20 a bit of a spotty dataset for the area really. 01:54PM

21 **Q** Did you do any dye flow sampling tests at any
22 location?

23 MS. COLLINS: Object to form.

24 **A** No.

25 **Q** I do not see in your report, and tell me if 01:55PM

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ANDY DAVIS, PhD, 4-7-09**161**

1 I'm wrong, that you have not identified any specific
2 anthropogenic sources peculiar to any particular
3 site; am I wrong on that?

4 MS. COLLINS: Object to form.

5 Q You seem to reference your Appendix B for 01:55PM
6 that, and I'm trying to find out what specific
7 anthropogenic sources you might have identified for
8 any of the site locations.

9 A I think there was one site where I noted that
10 it was adjacent to a village of some sort, so it 01:55PM
11 could have been --

12 Q What used to be Springdale but what you
13 changed to Springtown; is that the one you're
14 talking about?

15 A Correct, yes. 01:56PM

16 Q Do you know what the population of Springtown
17 is?

18 A I was looking at the number of houses.
19 Probably about perhaps 50 to a hundred.

20 Q Were you the one to put the name Springdale on 01:56PM
21 there or was it someone else?

22 A It was me. I got confused.

23 Q How did you come to realize that it was wrong?

24 A I was told it was wrong.

25 Q Who told you? 01:56PM

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ANDY DAVIS, PhD, 4-7-09

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1 **A** I forget. It was either Ken or Melissa or
2 somebody.

3 **Q** Did you at any time quantify the volume of
4 input at any of the anthropogenic sources that you
5 reference? 01:56PM

6 MS. COLLINS: Object to form.

7 **A** No.

8 **Q** Let's look at Site OK-3. There is a sample in
9 there in the middle of the page that says 334.53; do
10 you see that? 01:57PM

11 **A** Yes.

12 **Q** Okay. Can you tell whether that number was
13 taken exactly from the CDM data?

14 **A** It's probably an average of two samples.

15 **Q** Let me hand you what's been marked as Exhibit 01:58PM
16 3. This is from your dataset. You manipulated the
17 State's dataset into another dataset you worked
18 with; is that correct?

19 MS. COLLINS: Object to form.

20 **A** We didn't manipulate it. 01:58PM

21 **Q** Well, you adjusted it, you cut and pasted it,
22 that sort of thing?

23 **A** We extracted information the way it was. We
24 didn't change anything.

25 **Q** I'm not suggesting you changed it. I'm just 01:59PM

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ANDY DAVIS, PhD, 4-7-09**163**

1 saying you manipulated it in a way that you would
2 use it differently than what it was depicted in the
3 State's database?

4 MS. COLLINS: Object to form.

5 **A** We extracted the pieces we needed to do the 01:59PM
6 analysis.

7 **Q** Okay. On this Exhibit 3, can you tell me
8 where that 345 number comes from that's shown on
9 your aerial?

10 **A** The 334.53? 01:59PM

11 **Q** Yes, sir. The 334.53, can you tell me where
12 it's located?

13 **A** Yes. It looks like it would be averaged
14 between the 208.45 and the 460.61.

15 **Q** Okay, and those samples were taken, one in 01:59PM
16 October of '05 and another was April of '05;
17 correct?

18 **A** That's correct.

19 **Q** Why would you not use just simply one of those
20 samples or show them both there? 01:59PM

21 **A** Because if I used 208, you'd probably accuse
22 me of using the low number, and I felt using the 460
23 was inappropriate given the fact that we have the
24 208. So it seems reasonable to average the two.

25 **Q** And you could have used the 460 number, 02:00PM

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1 MS. COLLINS: Object to form.

2 **A** Well, hypothetically if there's a third sample
3 in between these two; is that what you're saying?

4 **Q** No, sir. I'm talking about in time. If a
5 land application occurred between April of '05 and 02:01PM
6 October of '05, would the April of '05 sample be of
7 little or no consequences to determine whether that
8 land application impacted subsequent to its
9 application?

10 MS. COLLINS: Object to form. Are you 02:01PM
11 making a representation that that happened or are
12 you asking him if --

13 MR. GARREN: No. I'm asking a hypothetical.

14 **A** Well, it wouldn't make an impact because my
15 assumption was that the litter would be spread 02:02PM
16 adjacent to the house. OK-03 is downstream of that
17 334, and so it would be completely transparent to
18 any OK-03 impacts.

19 **Q** Would it make a difference if that site was
20 upstream from the sample location that we just 02:02PM
21 talked about in your opinion?

22 MS. COLLINS: Object to form.

23 **A** It's not, so I can't answer the question.
24 It's a complete hypothetical. I mean, I used the
25 data so, you know, I don't know is the answer. 02:02PM

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1 surrounding the potential release and the types of
2 topography that we're examining, and, I mean, you
3 could have hypothetically all sort of variants
4 around that theme, but what I'm pointing out to you
5 is OK-03 does not appear in my opinion to be the 02:04PM
6 progenitor of this average 334 because that point
7 it's upstream, and that is not the way I assumed my
8 study to be set up.

9 Also, just one other issue that falls out of
10 this OK-03, I notice on this exhibit that you've got 02:05PM
11 surface water concentrations, and it just jogs my
12 memory, that what we did was to look at total
13 phosphorus. We talked about this morning, and also
14 I said this morning that I felt that averaging these
15 concentrations was reasonable for multiple sampling 02:05PM
16 events. As you can see, I think that these -- this
17 dataset bears out that representation because the
18 concentrations were all very similar.

19 Q Ask the answer be stricken. It was not
20 responsive to any question pending before the 02:05PM
21 witness.

22 MS. COLLINS: He was clarifying an earlier
23 answer. Are you saying that's impermissible?

24 Q Do you know when most poultry waste
25 applications occur in the Illinois River watershed? 02:05PM

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1 MR. BURNS: Object to form.

2 MS. COLLINS: Object to form.

3 A I believe it's in the spring or early summer.

4 Q In their text on this Page 10 you refer to a
5 surface water sample of .035 milligrams per liter. 02:06PM

6 Can you tell me where that is shown on your aerial
7 on Page 10?

8 A Oh. I believe this is one of the errata
9 points. I think that's when we thought that the
10 drainage was over to the east. Yeah. I corrected 02:06PM
11 it in the errata.

12 Q And so you're referring now to the .3933
13 location; is that correct?

14 A Yes, and actually the .035 was a groundwater
15 sample come to think of it. It was further down the 02:07PM
16 drainage. I think that is in, yeah, Appendix B.
17 There's the .035, and I realized that was a
18 groundwater sample or what's been defined as a
19 groundwater sample in the database. So that's what
20 led to that correction in the errata. 02:08PM

21 Q Why don't we go ahead and change the tape and
22 I'll get the next exhibit out.

23 VIDEOGRAPHER: We are now off the Record.
24 The time is 2:08 p.m.

25 (Following a short recess at 2:08 p.m., 02:08PM

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1 proceedings continued on the Record at 2:16 p.m.)

2 VIDEOGRAPHER: We are now back on the
3 record. The time is 2:16 p.m.

4 Q Dr. Davis, talking about surface water, in
5 Page 5 of your report you point out that you use a 02:16PM
6 rounded up number as .04 as a screening level. Do
7 you remember that in your report?

8 A Yes.

9 Q All right, and looking at Exhibit 5 that I
10 just gave to you, that is your dataset, and attached 02:16PM
11 to it is the CDM dataset for that location OK-05.
12 I'd ask you to look at the aerial in OK-05 to begin
13 with and tell me where in the dataset the .1093
14 sample is shown in either your dataset or CDM's
15 dataset. 02:16PM

16 A Well, this is an average. I assume if that's
17 the RS-000667 data point; is that what you are
18 referring to?

19 Q Yes, sir.

20 A And so that number is the average of these 02:17PM
21 data points. Is that what you --

22 Q I'm asking you to tell me how you got it
23 because I don't believe that to be the case, and I
24 think it's an error on your part, and I'm trying to
25 confirm that it is. 02:17PM

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1 MS. COLLINS: Object to form.

2 **A** Well, I don't know if that's -- I don't know
3 if that's that sample or if it's the .03 sample or
4 what.

5 **Q** Well, let's look at your dataset on Exhibit 5. 02:17PM
6 Fifth one down, do you see the number 1.090?

7 **A** Yes.

8 **Q** Okay, and do you see that number is also
9 rounded by you?

10 MS. COLLINS: Object to form. 02:18PM

11 **A** Rounded where?

12 **Q** Well, every number on your dataset is rounded
13 to zero and the third digit, is it not, looking at
14 Exhibit 5, your dataset?

15 **A** Well, there's a .03 there. 02:18PM

16 **Q** Let's just concentrate on one thing at a time
17 and we'll get where we need to be. Looking at your
18 Exhibit 5, the dataset that you have used, it's all
19 -- all those numbers in the surface water RS-0667
20 have been rounded to two digits; correct? 02:18PM

21 MS. COLLINS: Object to form.

22 **Q** In this column here, sir.

23 **A** Oh, oh, I'm sorry. Oh, I see. So we have the
24 .03, which would be I assume the average of the base
25 of the list of data points here. 02:19PM

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1 **Q** Look at the next page of Exhibit 5 and you'll
2 see the CDM data from which you rounded from. Do
3 you see the fifth number down that's 1.093
4 milligrams per liter in the result column?

5 **A** Yes. 02:19PM

6 **Q** And do you see where you've rounded that to
7 1.090?

8 **A** Right.

9 **Q** All right, and if you look at your aerial on
10 Site OK-5, you see a 0.1093. Is that an inadvertent 02:19PM
11 -- is that an error as a result of a placement of a
12 decimal point?

13 **A** No. What this sample is I believe is the
14 average that's .03 -- well, that's the 290.1, the
15 sediment, because the way I think that's correct is 02:19PM
16 if you look at the same sediment sample here on the
17 first page, you can see the 290.1, which is on the
18 same page here as is .03. The .03 I think is the
19 result of the average of all of those data above
20 that .03, which is in this second box down. It has 02:20PM
21 nothing to do with the .1093.

22 **Q** I didn't follow you. Where are you saying the
23 data point is for the 0.1093 in the data on Exhibit
24 5?

25 MS. COLLINS: Object to form. 02:20PM

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1 **A** Okay. There's a .1093 concentration at the
2 bottom of this depiction.

3 **Q** Correct, and is that a surface water?

4 **A** That is a surface water sample.

5 **Q** All right. 02:20PM

6 **A** There's also a 0.03, okay, which is next to
7 the 290.1, which is sediment.

8 **Q** Correct.

9 **A** The accumulated average of the data you
10 provided to me appears to be 0.03 I think. I'm not 02:20PM
11 understanding something here for sure. I don't know
12 where this RS-000667 is, and I don't know how --
13 whether or not this data point even relates to which
14 of these data points on this plot.

15 **Q** Well, it's your aerial and you created it, and 02:21PM
16 I'm trying to figure out where you got the plots on
17 your aerial from the database that you said you used
18 to get it there.

19 **A** Right. I'd have to go back to the database
20 and then cross -- 02:21PM

21 **Q** Isn't this database in Exhibit 5; isn't this
22 the database that you would have used for that site?

23 MS. COLLINS: Object to form. There's no
24 correlation.

25 **A** I don't know is the answer as I sit here right 02:21PM

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1 now.

2 Q Looking at Exhibit 5, do you see where it says
3 location RS-0661?

4 A Yes.

5 Q And do you see that that is .030? 02:21PM

6 A Correct.

7 Q And do you think that is not in fact the .030
8 that's listed in the aerial you just now talked
9 about?

10 A The .03, okay, it could be, yes. 02:21PM

11 Q Now, if you look at the one above it, we have
12 a different point at RS-667, and that has no average
13 listed in your tally there of the data. I'm trying
14 to inquire as to whether or not the 0.1093, which I
15 believe to be that site, is a misstatement on your 02:22PM
16 part as to what the numbers should be or if it's in
17 fact an average. Can you tell me?

18 MS. COLLINS: Are you representing that you
19 know or have information that connects RS-000667
20 sample location with what is depicted on here as 02:22PM
21 .1093 in terms of location, something that keys
22 those two together so we know we're talking about
23 the same thing?

24 MR. GARREN: Dr. Davis has that in the CDM
25 database with everything identified as the lat-long. 02:22PM

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1 He put these points on his aerial. I would assume
2 he, too, would know that.

3 MS. COLLINS: Yeah. Well, and he just told
4 you he would have to go look at the database to be
5 able to answer your question. 02:22PM

6 **A** I can't know without going back to the
7 database and making that inquiry. There's no way to
8 know.

9 **Q** Who checked your numbers when you created
10 these aerials against the database besides Dr. Kolm? 02:23PM

11 **A** I asked him to do that, and occasionally I
12 went back and also asked Jessie Sheffield, who is on
13 my staff, to do that.

14 **Q** All right. Let's look at Exhibit 5 alone, and
15 the two pages, do you see the CDM database where it 02:23PM
16 references the results and you see the database that
17 you used to the rounded numbers? Can you show me at
18 any place on those -- on your database where you
19 rounded up as opposed to down?

20 **A** So you want me to compare these two; right? 02:23PM
21 So compare --

22 **Q** The result columns.

23 **A** -- the result columns here with the result
24 column here.

25 **Q** Can you tell where you rounded up as opposed 02:24PM

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1 to rounded down on any number shown on this
2 document?

3 MS. COLLINS: Object to form.

4 **A** Well, these -- I don't know if these are
5 different numbers or what but, for example, the 02:24PM
6 first number says .051 on this page and here it says
7 0.03. Next one is .045 and it says .17 over here.
8 You have a .029 and .04. I don't see the
9 correlation to be honest here. So I can't answer
10 the question. 02:24PM

11 **Q** I'll represent to you that the CDM database is
12 pulled in the way that it was kept. I'm just as
13 confused as you, and that's why I'm inquiring how it
14 is that you caused these numbers not to be in the
15 same order that they were previously. Do you know 02:24PM
16 how that occurred?

17 **A** I don't have the first idea.

18 **Q** Okay.

19 **A** What I do see in the CDM database here is a
20 non-filtered sample, for example. So we would have 02:25PM
21 pulled out whatever is called total phosphorus from
22 the database, and it could well be those different
23 flavors of phosphorus in this particular CDM
24 database, and that might explain where we see a
25 smaller number and, I guess a smaller number would 02:25PM

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1 make the most obvious sense.

2 **Q** Are you looking at Exhibit 5 in the CDM
3 database?

4 **A** I'm just comparing, contrasting the two
5 databases because the CDM database has two, four, 02:25PM
6 six, eight, ten, sixteen, eighteen, twenty records
7 and ours has two, four, six, eight, ten, twelve,
8 sixteen, eighteen -- well, ours has 20 as well. I'd
9 have to go back and look at the database and see --

10 **Q** It would appear --

11 **A** -- what the explanation was.

12 **Q** It would appear that based on the numbers
13 you've just added that the non-filtered entry is
14 included, doesn't it?

15 MS. COLLINS: Object to form. 02:26PM

16 **A** Well, I don't see it because all of ours have
17 phosphorus total, and there's a non-filtered here.
18 So I don't know how this CDM database is pulled out,
19 first of all. So without going back and looking at
20 the CDM database that's been excised here and see if 02:26PM
21 it's truly representative of what we've got, I
22 couldn't tell you.

23 **Q** Why did you remove the dates from your samples
24 in Exhibit 5; I mean, why did you remove that where
25 it's difficult to tell what sample you're talking 02:26PM

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1 about?

2 MS. COLLINS: Object to form.

3 **A** Well, I didn't remove them per se. This is
4 just what we produced. There was no attempt to
5 remove dates. 02:27PM

6 **Q** Well, you did remove them because this is what
7 you relied on because you produced it in your
8 considered material. Why would you take the dates
9 out when you are trying to do your work on this
10 dataset? 02:27PM

11 **A** Because we're looking on a site-specific basis
12 for total phosphorus is why, so the dates were
13 really transparent material to us. Actually, as I
14 come to look at it now, I can sort of see some
15 correlations just being sourced in a different way, 02:27PM
16 and that's why they don't tally up next to each
17 other seems to me.

18 **Q** Let me hand you what's marked as Exhibit 6.
19 This has the OK-05 site located on it in the lower
20 right-hand corner. Do you see that? 02:29PM

21 **A** Yes.

22 **Q** Do you see where the Sediment 025 location is
23 on this upper right-hand portion of this?

24 **A** Yes.

25 **Q** Is that a sample that you relied on in 02:29PM

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1 estimating or analyzing this Site 05 --

2 MS. COLLINS: Object to form.

3 Q -- OK-05?

4 A Yes.

5 Q Tell me why you would rely on that particular 02:29PM
6 sediment sample which is not even part of the stream
7 flow from OK-05.

8 A Why do you say it's not part of the stream
9 flow?

10 Q Well, I see that there's a confluence of where 02:30PM
11 the stream that goes past OK-5 to the north then has
12 a new stream entering above as part of the site
13 location SD-025. Do you not see that?

14 A Well, you're referring to the blue line;
15 right? 02:30PM

16 Q Yes, sir.

17 A Well, you can see here where the blue line is
18 completely inaccurate as to where the stream is
19 going. So the blue line is not the be-all end-all
20 of where the confluence is going. Looks to me like 02:30PM
21 it's going just to that red dot there.

22 Q Okay, and so would you agree with me that this
23 has a better resolution than Google Earth relied on
24 by you at this site?

25 MS. COLLINS: Object to form, and as to 02:30PM

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1 Exhibit 6, I object to the use of this exhibit to
2 the extent that the lat-long is not represented on
3 here, nor the person who generated it; therefore,
4 there's no way for us to confirm this is accurate,
5 but if you want to question him on it, go ahead.

02:31PM

6 **Q** Can you tell, sir, from your report and the
7 aerial of Site 05 that that sediment sample is in
8 fact part of the same stream flowing to the north
9 from OK-05 site?

10 MS. COLLINS: Object to form.

02:31PM

11 **A** Well, it's hard to tell.

12 **Q** I'm asking you on your aerial.

13 **A** On my aerial?

14 **Q** Yeah. On the aerial you looked at, can you
15 tell from it?

02:31PM

16 **A** Well, I saw where it had been placed in
17 lat-long, and it appeared to be at the confluence so
18 -- and why they put this, I think the location of
19 surface water samples certainly seems to be on that
20 same drainage.

02:31PM

21 **Q** Would you agree with me that it's not certain?

22 MS. COLLINS: Object to form.

23 **A** Well, I think I can see a drainage pattern
24 here but, you know, obviously it would be helpful to
25 be out at the site.

02:32PM

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1 Q And is it your opinion --

2 A Let me finish. And whoever collected the
3 sample, have them point out where the sample was
4 collected, but the best of my knowledge right now,
5 it appears to be downstream from the drainage. If 02:32PM
6 it's not, then the situation becomes even more dire
7 because there is no data point for miles anywhere
8 near this particular facility.

9 Q Based on your testimony, you've not done
10 anything to determine whether or not the poultry 02:32PM
11 waste from OK-05 was land applied anywhere along the
12 fields, along that blue line in Exhibit No. 6, did
13 you?

14 MS. COLLINS: Object to form.

15 A Well, I assumed it was adjacent to the turkey 02:33PM
16 house.

17 Q And how close to the turkey house did you
18 assume it would be?

19 A Just in the next field over.

20 Q I'm going to give you a red pen and if you'd 02:33PM
21 mark on Exhibit 6 where you believe and assumed the
22 land application would have occurred for OK-05.

23 A Okay. I'm just going to assume this; right?
24 What I'm assuming is not --

25 Q Okay, but put that in a solid line so we can 02:33PM

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1 see it.

2 **A** Well, I would put a dash line because that's
3 my assumption. I'll make sure the dashes stand out.

4 **Q** Okay. Let me look and see where you drew your
5 line. Let's look at your report at Site OK-6, which 02:34PM
6 is on Page 13 of your report. I don't see where
7 your errata made any adjustments for this particular
8 site. So let me ask you, sir, in the aerial right
9 next to the OK-06 site, there's a Sample 0.1531. Do
10 you see that? 02:35PM

11 **A** Yes.

12 **Q** Is that sample downgradient from OK-06?

13 **A** No.

14 **Q** In your text you talk about groundwater and
15 surface water, and then you cite .04 as a sample 02:35PM
16 collected adjacent to OK-06. Does it appear to you
17 that the sample .1531 is at or near the same
18 location of .04?

19 **A** Yes.

20 **Q** Why did you not reference it in your text? 02:35PM

21 **A** Because the flow is out to the east and then
22 down that drainage and then off into the as I
23 recall -- hang on a second. Let's go back to the
24 other views. Yeah. The flows are off to the east
25 on this site and then down -- the potential flow 02:37PM

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1 anyway down towards this point on the southeast and
2 wraps around, passes 215 PPM sediment and then goes
3 on down to the 0.03.

4 Q Say that one more time, if you would, for the
5 Record so I follow you. You're starting at the 02:37PM
6 OK-06 site?

7 A Right.

8 Q And it flows which direction?

9 A Flows to the east there, down the gradient.
10 At least that's where it would flow. This area is 02:38PM
11 quite flat actually.

12 Q Well, you reference .04. How is it you can
13 reference it and not .1531?

14 MS. COLLINS: Object to form.

15 A Well, I reference it -- I show it in the 02:38PM
16 figure there. I have to go back and see what the
17 relative spatial relationship is in some level of
18 detail on those two particular samples. It could be
19 they were .153 as a subdrainage coming in from
20 somewhere else. I can't tell from the scale and 02:38PM
21 resolution.

22 Q Okay. Let me hand you Exhibit 7 and see if
23 the resolution on that exhibit is helpful.

24 MS. COLLINS: I object to any questions on
25 Exhibit 7 as something that's never been produced 02:39PM

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1 before in this case and is not giving any
2 information to gauge the accuracy of the
3 representation of the sample points and stream
4 points.

5 **Q** I'll represent to you, Dr. Davis, that the 02:39PM
6 lat-longs that are in the CDM database are depicted
7 in accordance to the sample designations on the
8 aerial of this Exhibit 7. Do you have an opinion,
9 sir, looking at this Exhibit 7, whether or not the
10 surface water and river stations RS-9002 and RS-786 02:40PM
11 or HFS-08 would be at a location that might have any
12 impact from OK-06?

13 **A** Well, based on this particular depiction and,
14 again, I don't know how accurate it is, RS-9002
15 would apparently be upstream of the confluence the 02:40PM
16 way it's depicted here from the two creeks.
17 RS-9002, I don't see any -- I must say I'm a bit
18 confused because the sample labeled HFS-08 has got a
19 matrix description as surface water, and yet it's
20 blue as far as I can tell, but I'm seeing this for 02:41PM
21 the first time. It appears to me that sediment
22 sample, if that's HFS-08, is 171, which wouldn't
23 appear to me to reference any impacts.

24 **Q** We're kind of wandering here. Let me ask
25 this: Did you consider Groundwater 25 and 02:42PM

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1 Groundwater 26 in your analysis on Site OK-06?

2 **A** I believe what -- one of those would be the
3 .025 that's depicted here.

4 **Q** Okay.

5 **A** I'd like to know what the basis for this 02:43PM
6 drainage map is here. I don't see an obvious
7 drainage pathway.

8 **Q** Is it your opinion then from the Google Earth
9 information that you relied on, it would be better
10 than the aerial that we're seeing here for drainage 02:43PM
11 pathway?

12 MS. COLLINS: Object to form.

13 **A** Well, I don't think you can tell from this
14 particular screenshot to be honest.

15 **Q** And what would Google Earth tell you with 02:43PM
16 regard to this general site location that you don't
17 see here?

18 **A** Well, it shows me the three-dimensional
19 orientation. What I think you can see in the
20 figures -- in the appendix, the slope here appears 02:44PM
21 towards the north, northeast, so --

22 **Q** Which image are you looking at in your
23 appendix; the lower image?

24 **A** The lower image, yeah.

25 **Q** And you believe that the slope and looking at 02:44PM

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1 that is to the north, northeast?

2 **A** That's the way it looks. If you look at the
3 drainage patterns here, you can clearly see the
4 drainage patterns go in the opposite direction than
5 the way it is depicted here.

02:45PM

6 **Q** On your exhibit in your report that's in front
7 of you there, do you have the -- draw the direction
8 of drainage pattern that you see on the
9 three-dimensional with this blue pen. Maybe we
10 ought to use the red ink so we can see it. Draw me
11 the drainage pattern that you're identifying on that
12 particular image -- I'm sorry. Draw it on yours,
13 then I'll -- well, draw it on both. Show me the
14 drainage pattern direction that you're observing.

02:45PM

15 **A** It seems to me more in this general direction.

02:45PM

16 **Q** Okay, and then do it again on the lower image
17 on yours.

18 **A** (Witness complied).

19 **Q** And you describe that as north, northeast?

20 **A** I'm sorry. This is southeast.

02:46PM

21 **Q** Thank you. That's why I was confused. That's
22 why I had you draw it.

23 **A** I'm confused because of the orientation of
24 these things.

25 **Q** Well, they are all facing north to the top,

02:46PM

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ANDY DAVIS, PhD, 4-7-09**186**

1 are they not?

2 **A** Not all of them, no. Some of them we rotate
3 to give you a better understanding of the
4 topography.

5 **Q** Looking back now at Exhibit 7 -- well, I'm 02:46PM
6 sorry. I misspoke. The dataset that goes with
7 OK-6, so if you'll look at datasets. Can you tell
8 from this dataset what, if any, numbers you rounded
9 up as opposed to down when you took them from CDM's
10 database and moved them to yours? 02:47PM

11 MS. COLLINS: Object to form.

12 **Q** Do these even correlate that you can see?

13 MS. COLLINS: Asked and answered.

14 **A** Let me look. Would you mind if I mark on the
15 exhibit? 02:47PM

16 **Q** No, sir.

17 **A** Looks like, best as I can tell after a cursory
18 examination, four would be defined as they were in
19 the CDM database. Two were rounded down because
20 they were reported as .031 and .022, and I can't see 02:48PM
21 the .037 analogously here. Also I'll note that
22 there appears to be more surface water data points
23 available in the database here that have phosphorus
24 total surface water designation than have been
25 reported in the CDM database. So, again, without 02:49PM

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1 going back and do doing a detailed analysis, I
2 don't exactly know why there's a difference.

3 Q Did you include the RS sampling stations with
4 HFS station as your total surface water?

5 A No. 02:49PM

6 Q All right. Did you do anything on the OK-6
7 site -- I'm not sure -- No. 8 there in front of you
8 I believe. Did you make any determination of
9 subsurface flows on Site OK-6?

10 MS. COLLINS: Object to form. 02:49PM

11 A What -- did I put in monitoring wells and look
12 at the gradient?

13 Q Yes. Did you do anything to determine what
14 would be the direction of subsurface flow from Site
15 OK-6? 02:50PM

16 A No. I don't believe anybody has done that,
17 and I didn't either.

18 Q Did you do anything to ascertain the fault or
19 fractures located at or near the OK-6 site?

20 A Well, there's no exposures. It's pastureland. 02:50PM
21 There's no way to know. Neither the State did I
22 don't think either.

23 Q Look at your errata. Did you change your
24 statement of drainage patterns on Site Arkansas 12
25 and 13? 02:51PM

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ANDY DAVIS, PhD, 4-7-09**189**

1 MS. COLLINS: Object to form.

2 **A** I don't know if cattle have access or not.

3 **Q** Okay.

4 **A** I don't recall.

5 **Q** Did you make any determination of the Cargill 02:54PM

6 -- any of the Cargill sites where cattle had access
7 to those properties?

8 MS. COLLINS: Object to form.

9 **A** I do remember seeing some cattle at some
10 location. 02:54PM

11 **Q** Do you know that they were at the location
12 which would have been considered to you the area
13 where land-applied poultry waste would have occurred
14 in your assumption?

15 MS. COLLINS: Object to form. 02:54PM

16 **A** Well, that would be internally inconsistent
17 since the idea is to promote grass growth, so having
18 cattle there would not be inconsistent with that
19 hypothesis.

20 **Q** But I'm asking your observation, sir, and that 02:54PM
21 is, where you saw the cattle, were they in a
22 location that was consistent with the assumption
23 that you made as to where land application should
24 have occurred on that site?

25 **A** For many of the sites that I recall that I did 02:55PM

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1 see cattle, it was adjacent to the houses. So, yes.

2 Q Bear with me. I'm trying to make a comparison
3 from your errata as I'm looking at my outline here.

4 Based upon your corrections to your errata, you now
5 know where Springdale and Springtown are located, do
6 you not?

02:56PM

7 A Yes.

8 Q Springdale is a larger population towards the
9 north and east?

10 A Correct.

02:57PM

11 Q All right. Do you know how many flocks go
12 through a turkey house on an average year?

13 MS. COLLINS: Object to form.

14 A I suppose it depends on the breeder, but I
15 suppose --

02:58PM

16 Q I said an average.

17 A On average? I can't tell because it depends
18 what the breeder is doing. I just know it takes
19 about 20 weeks for maturation. So obviously some
20 houses do different things with different flocks, so
21 I can't tell you.

02:58PM

22 Q Let's look at Exhibit 10. I believe the first
23 couple pages are excised from your data and the last
24 pages excised from the CDM data. Based on your
25 previous testimony, it's correct, is it not, that

03:00PM

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1 you would have averaged for your data point on the
2 site as HFS-02 surface water; is that correct?

3 MS. COLLINS: Object to form.

4 **A** Where is HFS-02?

5 **Q** You don't know by looking at this which one it 03:00PM
6 should be?

7 **A** No, I haven't the faintest idea.

8 **Q** Do you know which one is RS-160?

9 **A** No.

10 **Q** Do you know what any of the sites actually 03:00PM
11 are?

12 **A** No. My memory isn't, while brilliant, not
13 quite that.

14 **Q** Okay, but consistent with your testimony, you
15 would have averaged, would you have not? 03:00PM

16 MS. COLLINS: Object to form.

17 **A** Well, yeah, we would have averaged the total
18 P, but we would have sorted it on total, and here,
19 for example --

20 **Q** Looking at the CDM database page, which items 03:01PM
21 on HFS-02 would have been included in your dataset
22 in order to arrive at the average for whatever the
23 point is on your aerial; can you tell me by looking
24 at the dataset?

25 MS. COLLINS: Object to form. 03:01PM

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1 **Q** Might be I can ask it easier this way, Dr.

2 Davis. If you're looking solely at HFS-02, can you
3 tell me, sir, in your analysis what of those points
4 would you have taken in order to create an average;
5 would you have used them all or some of them?

03:02PM

6 **A** I would have used the total, however the total
7 is specified in the database. So we have a total P.
8 I would have assume that we'd have used all the
9 total P data since we've got a phosphorus total, not
10 an analyte list.

03:02PM

11 **Q** Do you see the total P and the number behind
12 it, that there's a parameter discussed there; do you
13 know whether or not the total P was determined by
14 different analytical testing?

15 MS. COLLINS: Object to form.

03:03PM

16 **A** It would look like it since there's different
17 methods, which I recognize at least two of them.

18 **Q** And would it, sir, be appropriate to average
19 all of those together when you've got two different
20 analyticals being used to determine total P?

03:03PM

21 MS. COLLINS: Object to form.

22 **A** If it's identified as total P, it's perfectly
23 acceptable, yes.

24 **Q** Okay. The very bottom station, RS-147, is
25 showing a result on CDM as .047. Is that in fact

03:03PM

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1 the -- did you round that number, sir, and if so,
2 did you round it down?

3 A Well, I don't know. I don't know where
4 RS-000147 is.

5 Q Well, look in your dataset and look at the 03:03PM
6 same location number and the result that you use in
7 rounding. Is that not rounded down as opposed to
8 up?

9 A I don't know that this dataset is --
10 represents this point. My understanding was if we 03:04PM
11 had a .037, that it would have been rounded up to .4
12 for example.

13 Q Well, in fact, sir, it appears to me that I'm
14 looking at a .047 on the CDM set and on yours it's
15 .0400 and in fact you would have rounded it down. 03:04PM
16 MS. COLLINS: Object to form.

17 A Well, either way it's a little bit irrelevant
18 because it doesn't change any of the conclusions if
19 in fact that data point is that particular location.

20 Q My point is, sir, wasn't that pretty much your 03:04PM
21 method in rounding, is that when it was CDM, above
22 .045 you would still round it down, such as we see
23 in this example on the .047, it would be rounded
24 down to .040?

25 MS. COLLINS: Object to form, misstates 03:05PM

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1 testimony.

2 A No. I thought we looked at some samples in
3 the last site. As a matter of fact, I identified
4 several that were identical in both databases, so --

5 Q Do you see on the CDM -- well, do you see on 03:05PM
6 both of them, yours and theirs, the edge of field
7 samples, do you see those there, EOF-03?

8 A Yes.

9 Q And did you take your EFO-3 data, add it and
10 average it? 03:05PM

11 MS. COLLINS: Form.

12 A I don't think I have an edge of field sample
13 on this notation.

14 Q AR-17, is that what you're looking at?

15 A Yes. I see a sediment sample. The -- 03:05PM

16 Q Do you see the number 3.34 on your aerial at
17 that location, AR-17?

18 A Oh, yes, I see it.

19 Q Okay, and I'll represent to you that if you
20 add edge of field three numbers there, 3.8, 4.2, 03:06PM
21 1.9, divided by 3, it comes up to 3.34. Does that
22 appear to be your edge of field?

23 MS. COLLINS: Object to form.

24 A Without knowing the specific location, I'll
25 take your representation if that's what you tell me. 03:06PM

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1 **Q** Okay. Well, if I look at both yours and CDM's
2 data, the edge of field data appears to be the same
3 for three locations; correct?

4 MS. COLLINS: Object to form.

5 **Q** Again, they're in different order -- 03:06PM

6 **A** Yes.

7 **Q** -- but you see them being the same, do you
8 not?

9 **A** I do see them, yes.

10 **Q** All right. Now, do you think it's 03:06PM

11 appropriate, sir, to have added as part of in
12 creating the average the edge of field sampling that
13 is done with a different testing regime? You can
14 see two were using sixty ten and the other was using
15 365.2. Those are different testing analyticals, are 03:07PM
16 they not?

17 MS. COLLINS: Object to form.

18 **A** Yes, but they're both reporting total P.

19 **Q** Okay, and you believe that's accurate then to
20 take those, average them together? 03:07PM

21 **A** Yes, it's reasonable.

22 **Q** Okay.

23 **A** I'm running out of steam here.

24 **Q** On this edge of field 03 site, did you make
25 any determination or inquiry as to whether or not 03:08PM

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1 that is a field owned by any of the Cargill facility
2 sites or owners of those sites?

3 MS. COLLINS: Object to form.

4 **A** No. It's quite a distance away. So I'd have
5 no reason to suspect it was related to a Cargill
6 site. 03:08PM

7 **Q** Are you aware, sir, that there are many
8 multi-tract landowners in the IRW?

9 **A** What's a multi-tract landowner?

10 **Q** Multi-tract landowner, meaning one who might
11 own land not contiguous, different parcels, not
12 contiguous. 03:09PM

13 **A** I don't know what the land ownership status
14 looks like in the IRW.

15 **Q** Do you know whether or not Cargill growers
16 lease lands apart from the land immediately adjacent
17 to their poultry barns for use of poultry waste
18 application? 03:09PM

19 **A** No.

20 **Q** Did you inquire whether anybody did? 03:09PM

21 MS. COLLINS: Object to form.

22 **Q** In the Cargill location sites, did you inquire
23 of any of those people whether or not they own,
24 lease -- own or lease other lands not adjacent to
25 their other barns or land where applied poultry 03:09PM

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1 waste occurs?

2 MS. COLLINS: Object to form.

3 **A** No.

4 MS. COLLINS: Are you representing that you
5 have information that indicates that this Edge of 03:10PM
6 Field 03 sample is taken from or nearby a farm owned
7 by a Cargill --

8 MR. GARREN: I'm not representing anything.
9 I'm simply asking him what inquiries he made as to
10 if he knows who owns the land that that edge of 03:10PM
11 field test was acquired.

12 MS. COLLINS: Thanks for clarifying.

13 **Q** Did Cargill or its representatives provide you
14 any documentation of the disposition of poultry
15 waste to third parties from any of their Cargill 03:10PM
16 locations?

17 MS. COLLINS: Object to form.

18 MR. BURNS: Object to form.

19 **A** No.

20 **Q** Did Cargill provide you any documentation of 03:11PM
21 poultry waste being removed from the watershed?

22 MS. COLLINS: Object to form.

23 **A** No.

24 **Q** Where are the calculations that you made to
25 either establish the average or some other 03:12PM

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1 calculation as to the data points you used?

2 MS. COLLINS: Object to form.

3 **A** It's done automatically within the program.

4 **Q** Did you supply your spreadsheets that show the
5 calculations that were performed to arrive at the
6 points used?

03:12PM

7 **A** No, because it's inherent within the software
8 to work these spreadsheets.

9 **Q** So the software that was used would have
10 required a data input for the individual samples?

03:13PM

11 **A** Yeah. I mean, we looked at the comparison
12 between the CDM database and what we used so -- and
13 they're comparable.

14 **Q** Is the -- tell me how the data is input into
15 the software that creates the calculation for the
16 average that you used in order to arrive at the
17 point that then is depicted on your aerials.

03:13PM

18 **A** Basically we got the Access database and
19 extracted the data for sediments or surface water,
20 and relate it using the northings and eastings, and
21 then did the calculations within the software.

03:14PM

22 That's the high level explanation.

23 **Q** The software is listed in your report that's
24 used?

25 **A** Well, it's that Google Earth platform that we

03:14PM

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1 used, yeah.

2 **Q** Okay. How are the averages determined I guess
3 is my question to you?

4 **A** Oh.

5 **Q** Is it determined within the Google Earth 03:14PM
6 software or did you arrive at an average and input
7 it into the Google Earth?

8 **A** My understanding is what we did was to overlay
9 something that we call Geoship, which takes the data
10 and incorporates all of the total phosphorus in this 03:14PM
11 case data, and that computation is done within that
12 software and then superimposed on Google Earth at
13 the correct northing and easting.

14 **Q** Is there a manipulation to the data required
15 in order for it to provide you the average function 03:14PM
16 for each of these data points where there are
17 multiple samples?

18 MS. COLLINS: Object to form.

19 **A** Well, just to add the samples up and divide by
20 the number. 03:15PM

21 **Q** Is that done manually or is it done by the --
22 is it done before it's put into the software or is
23 it done as part of the software working with that
24 data?

25 **A** It's part of the software working with that 03:15PM

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1 data.

2 Q Okay. So you give it an instruction to
3 average all samples at one site?

4 A All of the selected samples, yes. You color
5 out based on the descriptor in the database. 03:15PM

6 Q Do you instruct that same software to do the
7 rounding that appears here in your database?

8 A Yes. It will take it to whatever significant
9 figures and we usually use two.

10 Q We've looked at several examples of the CDM 03:15PM
11 database compared to your database and you can see
12 the rounding that's done there. Was the rounding
13 done before it goes into the computer to do the
14 averaging or did it do the rounding for you?

15 A It does the rounding for us. 03:16PM

16 Q And did anybody make a determination that the
17 rounding -- at what stage rounding occurs up and
18 down; is it on a .5 and goes up or is it .5 it goes
19 down; do you know?

20 A I don't know as I sit here today. 03:16PM

21 Q Are the numbers that I see in the worksheets
22 that you provided the State, such as Davis 739 P
23 total sediment in depth, are those the numbers that
24 are actually used in the averaging; do you know?

25 A Say it again. 03:16PM

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1 **Q** Look at Exhibit 11, for example. Do you have
2 that? I haven't given it to you. Let's just look
3 at it since it's easier. It's just a couple of
4 pages. On your -- on the first page do you see the
5 results column where yours are rounded?

03:16PM

6 **A** Right.

7 **Q** All right. Is that rounding done by somebody
8 on your staff before it goes into the Google
9 software?

10 **A** No. It is just done within the Google
11 software.

03:17PM

12 **Q** So is this printout from that software because
13 it's an XLS spreadsheet?

14 **A** Yes. It would just be derived -- it would be
15 taken out of the software, dumped into Excel and
16 that's when you can print it.

03:17PM

17 **Q** All right, and that's what you did by
18 presenting these spreadsheets to the State of
19 Oklahoma?

20 **A** That's correct.

03:17PM

21 **Q** Was the input directly from the Access
22 database supplied by CDM that you would see on the
23 next page of this same exhibit?

24 **A** Yes.

25 **Q** Let's take a break. We've got to change a

03:17PM

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1 tape.

2 VIDEOGRAPHER: We are now off the Record.

3 The time is 3:17 p.m.

4 (Following a short recess at 3:17 p.m.,

5 proceedings continued on the Record at 3:27 p.m.) 03:27PM

6 VIDEOGRAPHER: We are back on the Record.

7 The time is 3:27 p.m.

8 Q Do you have Exhibit 11, Dr. Davis?

9 A Yes.

10 Q Do me a favor here and let's count the entries 03:27PM

11 for your database for the RS-0234 and see if you get

12 17 as I did.

13 A I think that's correct.

14 Q And then look at the same station ID for the

15 CDM material, which is the next page of your 03:27PM

16 exhibit. Do you get 18 values there?

17 A I think that's correct.

18 Q Looking at the CDM values, the third one down

19 is a .962 milligrams per liter entry. Do you see

20 that? 03:28PM

21 A Yes.

22 Q Do you see that anywhere on your database?

23 A No, I don't.

24 Q Can you explain why that particular entry,

25 which is the largest entry, would not be reflective 03:28PM

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ANDY DAVIS, PhD, 4-7-09**203**

1 of what was run through your database?

2 MS. COLLINS: Object to form.

3 **A** Not as I sit here right now, no. I'd have to
4 go back and find out.

5 **Q** Okay. Looking at the aerial at Page 29 of 03:28PM
6 your report, and I believe it appears in your
7 Appendix B also, there is a water sample .0167. Can
8 you tell me where that came from on your dataset or
9 the CDM dataset?

10 **A** Well, not that one without knowing the -- 03:29PM

11 **Q** I will represent to you that it's -- we
12 believe it to be RS-234 based upon lat-longs that
13 we've observed from your materials here.

14 **A** Okay.

15 **Q** Are you able to tell where that number came 03:30PM
16 from from these datasets that apparently are tied to
17 AR-22?

18 **A** I don't know. It's .0167 you're saying is
19 234?

20 **Q** That's what we believe it to be, and I'm 03:30PM
21 looking at the dataset that you provided us for that
22 same AR-22 that I'm trying to myself identify where
23 it came from.

24 **A** Well, I don't know as I sit here right now.

25 **Q** Okay. Is the data point that's on your aerial 03:30PM

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ANDY DAVIS, PhD, 4-7-09**204**

1 .18, is that a rounding by you of Station RS-256
2 that reported at CDM at .187?

3 MS. COLLINS: Object to form.

4 **A** That would appear to be the case, yes. That's
5 the one that's immediately downgradient from that, 03:31PM
6 appears to be a disposal area.

7 **Q** That clearly was rounded down, not up, wasn't
8 it, sir?

9 MS. COLLINS: Object to form.

10 **A** Well, it was not actually rounded down because 03:31PM
11 it's two significant figures. So it was just two
12 significant figures.

13 **Q** But you've been doing rounding, and I'm trying
14 to figure out. You've got a 1.87 or a .187 and you
15 round it to .18. Isn't that rounding making the 03:32PM
16 number smaller?

17 **A** Well, it's making smaller, but if it would be
18 .180, I suppose it might be rounding down if it's
19 taking two significant figures. Perhaps it could be
20 .19. Either way, it's immaterial. It changes no 03:32PM
21 conclusions.

22 **Q** Tell me, sir, what is the direction of flow on
23 the AR-22 on the stream.

24 **A** The way it's depicted on this picture, it
25 appears to be towards the northeast for the main 03:33PM

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1 branch.

2 Q Do you, sir, know what the -- did you make a
3 calculation to determine the mean values when there
4 were a number of samples at the same location or did
5 you just routinely average?

03:34PM

6 MS. COLLINS: Object to form.

7 A What do you mean mean as opposed to average?
8 They're the same thing.

9 Q Well, it's just that when we've tried to
10 average your numbers, we don't get the same thing,
11 and that's why I was asking whether or not you used
12 some other different calculation.

03:34PM

13 A To the best of my knowledge, we used the data
14 and summed them and divide by the number of samples.

15 Q Okay. I believe you testified earlier today
16 that the time of the sample was really of no
17 significance to you in your analysis; is that
18 correct?

03:34PM

19 A That's correct.

20 Q So if I look at Exhibit 11, the AR-22, the CDM
21 portion of the database because it has dates on it,
22 do you see on the Station 234 at the top, there's an
23 August 10, '06 base flow of .029?

03:35PM

24 A Right.

25 Q And do you see at Station RS-257 on the same

03:35PM

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ANDY DAVIS, PhD, 4-7-09**206**

1 day there's another base flow of .031. Is that
2 significant to you in trying to find samples that
3 are flowing perhaps on the same day as to whether or
4 not there was any impact or not in that particular
5 day?

03:35PM

6 **A** Well, probably not because almost all of these
7 data seem to be pretty similar to the .029 or range
8 between .1 and .3 or thereabouts, sorry, .1 and --
9 .01 and .03 or thereabouts. So they're pretty

10 similar, with the exception of that one outlier, the
11 .962, and I don't know what that's due to.

03:36PM

12 **Q** Okay. Do you make any inquiry as to what
13 caused the .962 on March 27th?

14 **A** No. I don't know what the QA/QC -- if it's
15 good or not. There may be a host of other reasons
16 for that anomalous concentration.

03:36PM

17 **Q** You didn't report it in your report as to why
18 you didn't use it, though, did you?

19 **A** No. I'll have to go back and look at that.

20 **Q** Let's change subjects and I'm going to ask you
21 now to look at Exhibit 12, sir. Can you identify
22 this document to the court, please?

03:37PM

23 **A** This is a letter I received from Faegre &
24 Benson in November engaging our company.

25 **Q** Go to the Bates number Davis 15. Tell me what

03:37PM

ANDY DAVIS, PhD, 4-7-09

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1 that is.

2 **A** That's a budget for Phase II of our work.

3 **Q** Do you know what the budget was for Phase I?

4 **A** I don't recall off the top of my head, no.

5 **Q** I don't recall seeing anything on Phase I in 03:38PM
6 your considered materials. Is there a reason why
7 that wasn't included or was there a budget for Phase
8 I?

9 **A** I think I was instructed just to do an
10 overview of the data first off and see what I came 03:38PM
11 up with.

12 **Q** Well, did you put anything in writing to
13 Faegre Benson with regard to Phase I and the
14 amounts?

15 **A** No. 03:38PM

16 **Q** Look through the rest of this exhibit and tell
17 me if you believe this is to be representative of
18 all of the invoices submitted by you and paid
19 assumingly.

20 **A** I suppose through the time of the report we 03:39PM
21 invoiced, yes.

22 **Q** Did your work change from analyzing 34 sites
23 to 35 sites or did it stay at 34 the entire time?

24 **A** 35 the entire time.

25 **Q** Well, on Page 18 it says review of 34 sites. 03:39PM

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ANDY DAVIS, PhD, 4-7-09**208**

1 **A** To be honest, I don't recall.

2 **Q** Okay. On that same page, under deliverables,
3 the next to last one, reviewed GLEAMS model. Tell
4 me exactly what was done regarding the GLEAMS model
5 in that review. 03:40PM

6 **A** We were looking at the GLEAMS model to see if
7 we could use a similar approach, but we decided it
8 wouldn't be feasible or reasonable for this project.

9 **Q** And tell me why it wasn't feasible or
10 reasonable. 03:40PM

11 **A** Well, time frame for one and also getting
12 correct data inputs on a local basis. I didn't
13 think it would be possible to use a model for a --
14 from a local scale on a facility-based approach.

15 **Q** So I'm clear, there was no data input into a 03:40PM
16 GLEAMS model at any time?

17 **A** No.

18 **Q** No being correct, there was not?

19 **A** No being correct, there was not.

20 **Q** Thanks. Other than the trip that you 03:40PM
21 discussed on April 1 and April 2 into the watershed
22 you've made and the one time driving through from
23 Little Rock, you've made no other field trips into
24 the IRW; is that correct?

25 **A** Not that I recall. 03:41PM

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1	Q	What is that referencing?
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2 **A** That's where I've taken three shots of that
3 particular location.

4 Q And are they identified as A and B in those
5 photos that I could tell which ones are which? 03:43PM

6 **A** Well, these photos had designators in the file
7 name. I don't see the designators in the file name
8 here. I see the Bates number.

9	Q	All right.
---	---	------------

10 MS. COLLINS: We can provide you with a 03:43PM
11 list of those if you like. I thought that was
12 supposed to be transmitted to you.

13 MR. GARREN: Yes.

14 MS. COLLINS: So I'll send you a list that
15 shows the Bates number and the file name so you can 03:43PM
16 correlate it to this map.

17 MR. GARREN: Thank you.

18 Q Did you at any time quantify and compare the
19 other sources to poultry waste that are generated
20 from the Cargill locations? 03:44PM

21 MS. COLLINS: I'm sorry. Could you read
22 that question back?

23 (Whereupon, the court reporter read
24 back the previous question.)

25	Q	Let me restate that question. Did you	03:44PM
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1 quantify and/or compare other sources of phosphorus
2 from any of the Cargill sites in your analysis?

3 MS. COLLINS: Object to form.

4 **A** Well, I looked at the relationships between
5 the site locations and the water chemistry. I'm not 03:44PM
6 quite sure. So, yes, I did.

7 **Q** All right, and did you take into consideration
8 septic tanks on location at any Cargill sites?

9 **A** Well, no, because those are mainly up from the
10 sites. My sense is that septic tanks would be a 03:45PM
11 more significant contributor adjacent to the water
12 courses.

13 **Q** Are you talking in general now or are you
14 talking about site-specific Cargill locations?

15 **A** In general. So if a site is an upland 03:45PM
16 location, the septic tank pathway is probably not
17 going to be very significant.

18 MR. GARREN: Can you read back his last
19 response?

20 (Whereupon, the court reporter read
21 back the previous question.)

22 **A** I think I used too many double negatives. The
23 septic tank source issue is going to be more
24 relevant adjacent to a water course, immediately
25 adjacent to a water course where there's houses or 03:46PM

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1 other structures with a septic tank.

2 **Q** And why is that in your opinion?

3 **A** Because the alluvial gravels are likely to be
4 coarser, and there will be a greater chance for over
5 time septic upsets and contributions from septic 03:46PM
6 sources. Typically I don't believe a septic tank
7 release would go very far just because of the nature
8 of the soils, and so if you're in the upland areas
9 where you have more acid soils and more aluminum and
10 iron in the soil profile, and this goes anywhere in 03:47PM
11 the uplands, not just a poultry house, I don't think
12 septic tank releases would be of any great
13 significance.

14 **Q** And you're saying that generally throughout
15 the IRW; is that what you're saying? 03:47PM

16 **A** Yes.

17 **Q** All right, and for that reason, you didn't
18 consider septic tanks at the Cargill site locations
19 as part of your analysis?

20 **A** That's correct. 03:47PM

21 MR. GARREN: I'll pass the witness.

22 MS. COLLINS: First, Mr. Garren, for the
23 Record, as to the aerial photos in Exhibit 6, 7 -- 6
24 and 7, and those are the only two we've looked at
25 today, can you state what the source is of these? 03:48PM

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1 MR. GARREN: Pardon me?

2 MS. COLLINS: Can you state what the source
3 is?

4 MR. GARREN: Yeah. It's the aerial that's
5 been provided to the defendants used by the State in 03:48PM
6 this case.

7 MS. COLLINS: Okay. So these are the
8 aerials that were previously produced in this case?

9 MR. GARREN: Yeah. Not recently. They've
10 been produced some time ago. 03:48PM

11 MS. COLLINS: But previously produced?

12 MR. GARREN: Oh, I'm sorry. Previously
13 produced, that's correct.

14 MS. COLLINS: And can you tell us who
15 prepared these and drew -- I mean, this is not just 03:48PM
16 the native files. There are overlays on here that
17 show sample points and arrows indicating flow.

18 MR. GARREN: Combination of Lithochimeia
19 and CDM.

20 CROSS EXAMINATION

21 BY MS. COLLINS:

22 Q Dr. Davis, if you would please turn back to
23 your report and specifically to Page 13 for Site
24 OK-06 and then to actually Appendix B for OK-06, I
25 should be asking you to look at the errata of 03:50PM

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1 Appendix B. I don't know if that's been marked as
2 an exhibit, though.

3 MR. GARREN: It hasn't.

4 Q So referring to your errata, Appendix B,
5 images for OK-06, on the third image do you note any 03:50PM
6 groundwater sample data on this image?

7 A I think there's two points there. There's a
8 0.015 and a 0.025.

9 Q And were those two points depicted in any of
10 the images in the original Appendix B? 03:51PM

11 A The .015 was, yes, and the .025 on the upper
12 one.

13 Q And you're referring to the Site OK-06,
14 Appendix B, the top photo shows which sample?

15 A The .025. 03:51PM

16 Q And the lower one shows which?

17 A 0.015.

18 Q Would you refer to Page 29 of your report for
19 Site AR-22, and there were some discussion earlier
20 about the sample point .18, which is a surface water 03:51PM
21 sample in the lower left-hand quarter of that image.

22 Do you remember that?

23 A Yes.

24 MR. GARREN: Sorry. What page, Counsel?

25 MS. COLLINS: 29. 03:52PM

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1 MR. GARREN: Thank you.

2 Q Based on your analysis, is there any
3 significance as to whether that sample was
4 accurately reported as .18 or .187?

5 A No. It's completely transparent. 03:52PM

6 Q Why is that?

7 A Because the sample location is upstream of
8 where the confluence from sites AR-27 and AR-28
9 enter the receiving stream, so it can't be impacted
10 by any of those poultry houses and, in fact, that 03:52PM
11 0.18 is downstream of what appears to be a trash
12 area as shown on the inset on that particular photo.

13 Q During your work on this case, did you review
14 the expert reports of Dr. Jarman and Dr. Clay as
15 well? 03:54PM

16 A I did look at Dr. Clay. I don't recall Dr.
17 Jarman.

18 Q Okay, and earlier you mentioned that you made
19 a review of some nature of the nitrate levels in
20 environmental samples in proximity to the Cargill 03:54PM
21 locations?

22 A Correct.

23 Q Did you draw any basic conclusions about the
24 nitrate levels in environmental samples in proximity
25 to Cargill locations? 03:54PM

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1 **A** Yes. Using -- I used a 10 milligram per liter
2 cutoff, and I found no apparent releases based on
3 that particular cutoff.

4 **Q** And is that because the values you saw were
5 below 10 milligrams per liter generally? 03:55PM

6 **A** Yes.

7 **Q** Have you determined where or why samples were
8 rounded, sample results were rounded to two
9 significant figures in some instances in some of the
10 documents we've looked at where that calculation 03:56PM
11 took place in your process?

12 **A** Well, in some instances --

13 MR. GARREN: Object to form.

14 **A** In some instances if there are different data
15 points and some have got two significant figures and 03:56PM
16 some have got three significant figures, the program
17 automatically rounds it down to two figures or
18 rounds to two figures.

19 MS. COLLINS: I don't have any other
20 questions. 03:56PM

21 REDIRECT EXAMINATION

22 BY MR. GARREN:

23 **Q** A couple of follow-up, Dr. Davis. Is -- when
24 you have a .187, are there two or three significant
25 figures in that number? 03:57PM

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1 **A** There are three significant figures in that
2 number.

3 **Q** All right, and if you were to round it, where
4 would you normally expect it to round to to get to
5 two significant figures? 03:57PM

6 MS. COLLINS: Object to form.

7 **A** To .19.

8 **Q** Tell me and show me please in your report
9 where you make any findings and conclusions with
10 regard to nitrate in your report. 03:57PM

11 **A** There is nothing here specific to nitrate in
12 the report.

13 MR. GARREN: No other questions.

14 CROSS EXAMINATION

15 BY MR. BURNS: 03:57PM

16 **Q** I have a few. On Page 4 of your report, Dr.
17 Davis, you identify a list of other potential
18 anthropogenic sources, and one of the categories you
19 have listed is poultry. What do you mean by the
20 term poultry on that list? 03:58PM

21 **A** Well, it's conceivable that maybe some
22 locations, if the setting is right, where some
23 contribution from fields where poultry has been
24 applied.

25 **Q** How did you identify a potential field where 03:58PM

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1 poultry litter might have been applied?

2 **A** Well, I didn't. I was only looking at the
3 Cargill sites. I'm just saying conceivably it's not
4 beyond the bounds of reason.

5 **Q** Okay. So with regard to the 35 locations I, 03:58PM
6 think 35 is the right number, there aren't any that
7 you would point to specifically that say that
8 poultry is another potential anthropogenic source?

9 MR. GARREN: Object to form.

10 **A** Based on the data I have received and reviewed 03:58PM
11 from the State, that appears to be the case.

12 **Q** Okay. When you were reviewing these sites --
13 in your review of these sites, did you identify any
14 locations where there appeared to be other poultry
15 farming activities in the vicinity of the Cargill 03:59PM
16 location?

17 MR. GARREN: Object to form.

18 **A** When you say vicinity, what do you mean
19 vicinity; is that a mile radius or 200 feet?

20 **Q** Two-mile radius. 03:59PM

21 **A** Yes, there's areas where there's other poultry
22 houses within the Cargill vicinity as you've defined
23 it.

24 **Q** Okay, and did you undertake any efforts to
25 confirm whether those houses were actively involved 03:59PM

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1 in poultry raising?

2 **A** No.

3 **Q** Okay, and you didn't identify what company
4 those houses might have been in contract with?

5 **A** What other houses in the vicinity of -- 04:00PM

6 **Q** Right.

7 **A** No.

8 **Q** Okay. Did you make any assumptions regarding
9 application of poultry litter from other houses in
10 the vicinity of Cargill houses; in other words, did 04:00PM
11 you assume that poultry litter was applied in the
12 vicinity of those houses?

13 MR. GARREN: Object to form.

14 **A** I didn't make any assumption that any other
15 houses other than Cargill houses that I've reported 04:00PM
16 on this report.

17 **Q** Okay, and so to the extent you identified
18 other poultry houses, you didn't conduct any
19 interviews of the poultry growers that own those
20 houses? 04:00PM

21 **A** I didn't evaluate poultry houses. I didn't
22 talk to poultry house owners. I didn't visit
23 poultry houses. The only ones -- except for the
24 Cargill houses.

25 **Q** Okay. Given that you didn't evaluate poultry 04:00PM

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1 litter application from any houses other than the
2 Cargill houses in the report, would you agree that
3 you would not be able to testify to a reasonable
4 degree of scientific certainty that any other houses
5 from any other integrator contributed any
6 contaminants to the waters of the Illinois River
7 watershed?

04:01PM

8 MR. GARREN: Object to form.

9 **A** I haven't investigated any of the other
10 poultry houses, and I don't intend to testify on
11 anything other than the Cargill houses.

04:01PM

12 **Q** Okay. You testified at some point that there
13 were elevated phosphorus levels at surface waters in
14 some areas in the watershed. What did you mean by
15 the term elevated?

04:01PM

16 **A** I used 0.04 milligrams per liter as my cutoff,
17 just based, as it points out in the report, on a
18 .037 number that has been adopted by the State of
19 Oklahoma, but I've also seen Engel, for example, use
20 .05 as an acceptable level, but I used the .04 as my
21 cutoff.

04:02PM

22 **Q** Okay. So your definition of elevated today
23 has just been in excess of the baseline level that
24 you used in your report?

25 **A** Well, it's not really a baseline level the

04:02PM

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1 same way I construed the sediment baseline level.

2 That is a number that's basically a 30-day average,
3 which obviously hasn't been collected here, but I
4 used that as a fallback number I suppose.

5 Q Okay, but you're not offering any opinion that 04:02PM
6 that .04 level is an appropriate standard for water
7 quality in the Illinois River watershed?

8 MR. GARREN: Object to form.

9 A That's correct.

10 MR. BURNS: I pass the witness. 04:02PM

11 REDIRECT EXAMINATION

12 BY MR. GARREN:

13 Q One more question, Dr. Davis. The Oklahoma
14 standard that you referred to, the .037 water
15 quality standard, do you know how that's calculated? 04:03PM

16 A As I understand, it's a 30-day average where
17 you take a sample every 30 days and then look at the
18 average, and if it exceeds the 0.037, then that's
19 considered to be exceeding that standard.

20 Q You take an average -- you take a sample every 04:03PM
21 30 days; is that what you understand?

22 A No. Every day for 30 days as I understand it.

23 MR. GARREN: No other questions.

24 VIDEOGRAPHER: This concludes the

25 deposition. We are now off the Record. The time is 04:03PM

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1 4:04 p.m.

2 (Whereupon, the deposition was
3 concluded at 4:04 p.m.)
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SIGNATURE PAGE

I, Andy Davis, PhD, do hereby certify
that the foregoing deposition was presented to me by
Lisa A. Steinmeyer as a true and correct transcript
of the proceedings in the above styled and numbered
cause, and I now sign the same as true and correct.

WITNESS my hand this _____ day of
_____, 2009.

ANDY DAVIS, PhD

SUBSCRIBED AND SWORN TO before me this
_____ day of _____, 2009.

Notary Public

My Commission Expires:

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C E R T I F I C A T E

STATE OF OKLAHOMA)
) ss.
COUNTY OF TULSA)

I, Lisa A. Steinmeyer, Certified
Shorthand Reporter within and for Tulsa County,
State of Oklahoma, do hereby certify that the above
named witness was by me first duly sworn to testify
the truth, the whole truth and nothing but the truth
in the case aforesaid, and that I reported in
stenograph his deposition; that my stenograph notes
were thereafter transcribed and reduced to
typewritten form under my supervision, as the same
appears herein.

I further certify that the foregoing 223
pages contain a full, true and correct transcript of
the deposition taken at such time and place.

I further certify that I am not attorney
for or relative to either of said parties, or
otherwise interested in the event of said action.

WITNESS MY HAND AND SEAL this 23rd day
of April, 2009.

LISA A. STEINMEYER, CRR
CSR No. 386

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CORRECTIONS TO THE DEPOSITION OF
ANDY DAVIS, PhD

PAGE AND LINE NUMBER

CORRECTION

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